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SKULL AND BRAIN TRAUMAS: THEIR SEQUELAE

A CLINICAL REVIEW OF TWO HUNDRED AND FIFTY-FIVE CASES *

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LOS ANGELES

It is well known that, after recovery has occurred from the acute effects of a head injury, numerous vestiges of the injury often remain or develop in the form of subacute or chronic symptoms and signs. In an attempt to establish a basis for more accurate determination as to the prognosis of these later sequelae, we have investigated 255 cases, which have been followed from one to five years after accident. In this study we were primarily concerned with the relationship existing between the location of the fracture and the development and duration of both symptoms and neurologic signs, as well as with the significance of the primary period of unconsciousness.

The series was subdivided into groups depending on the presence and location of fracture, the diagnosis of which was determined by roentgenography. Rupture of the ear membrane, with resulting hemorrhage, or a distended bluish membrane was considered diagnostic of fracture through the petrous portion of the temporal bone. The latter fact, however, did not always hold true, though it occurs with sufficient frequency to be utilized, we believe, as a practical criterion (chart 1).

The types of accident were as follows: Ninety-five, or 38 per cent, of these patients were struck by objects; seventy-seven, or 31 per cent, fell from heights; sixty-eight, or 27 per cent, were injured by automobiles; twelve, or 5 per cent, met with miscellaneous mishaps, and three, or 1 per cent, fell to the ground while walking.

In 205 of these patients, or 80 per cent, subjective complaints developed, whereas in 183 patients, or 32.5 per cent, organic neurologic signs developed, exclusive of hyperactive reflexes.

Mental disturbances and convulsive states were the only changes that manifested themselves at a period later than three months after injury. All other types of complaints appeared within a short time after the injury, so that no confusion as to their etiology existed.

Considering the occurrence of symptoms and signs in relation to the location of fracture, it may be noted that, among those cases with depressed fractures of the vault, symptoms developed in only 40 per cent and neurologic signs in 44 per cent. Among those cases without skull fracture, symptoms developed in 90 per cent, and in only 18.5 per cent, exclusive of hyperactive reflexes, did organic neurologic signs develop. In combined fractures of the base and vault both signs and symptoms developed in the highest percentage of all groups, while in fractures involving the base, signs developed to the same degree as did symptoms (charts 2 and 3). From this study it is evident that in those patients suffering from depressed fractures symptoms are less likely to develop than in those without fracture, while combined fractures of the base and vault are the most serious.

The various symptoms and the frequency of their occurrence in this series are tabulated in chart 4. Headaches, dizziness and mental changes lead the list. Convulsive states appeared in 6 per cent; body pains, gastric complaints, numbness, hallucinations and staggering gait in less than 5 per cent.

Headaches developed more often in those cases without skull fractures, whereas dizziness occurred more frequently in fractures of the base. As dizziness is mainly due to involvement of the vestibular pathway, this fact may be readily explained. Diminished hearing and tinnitus are caused by cochlear involvement and occur in fractures of the middle fossa to a greater degree than in fractures involving other areas. Mental changes, nervousness, visual complaints, fatigue, insomnia, body pains, gastric disturbances, numbness and staggering gait occurred in all types of fractures, so that no conclusions could be drawn (chart 5).

The younger the patient, the less likely it is that symptoms or signs will develop. In this series, in 75 per cent of the patients below the age of 10 years none of the sequelae developed. The older the patient, the more likely it is that complaints will develop, and it is more probable that these complaints will continue on for a longer period of time than in a younger patient. Forty-six per cent of the patients between the ages of 50 and 80 years continued with subjective complaints from one and a half to five years, whereas in only 23 per cent between the ages of 10 and 50 did the complaints continue for a similar period of time.

Headache was the most frequent complaint and occurred in 67 per cent of the cases. The location varied greatly and manifested itself in all sectors of the cranium. The character of pain also differed. It usually was deep seated, of a bursting, throbbing, aching, shooting or sharp type. Most frequently this pain was spasmodic and occurred in attacks of from one-half hour to three hours in duration, these attacks coming on three or four times a day; in other patients the headache was continuous with only short intervals of freedom usually associated with acute exacerbations of extreme severity lasting from three hours to an

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entire day. The pain was exaggerated by excitement, exertion, noise, sunlight, movements of the head, and worry. It was frequently relieved by bed rest, sedatives and quietness.

If the headaches persisted beyond one and a half years, it seemed likely that they would be permanent, as in this series only 3 per cent of the patients recovered after one and a half years. In 42 per cent of these cases the headaches subsided in one and one-half years, whereas in 31 per cent the headaches persisted during the five year period. The remaining cases were not followed for the full five year period.

Dizziness was the second most frequent of complaints, occurring in 60 per cent of the patients. If

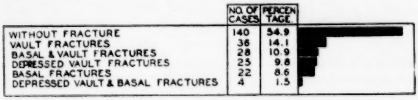
NO. OF CASES
PERCENTAGE
WITHOUT FRACTURE 140 54.9
VAULT FRACTURES 36 14.1
BASAL & VAULT FRACTURES 28 10.9
DEPRESSED VAULT FRACTURES 25 9.8
BASAL FRACTURES 22 8.6
DEPRESSED VAULT & BASAL FRACTURES 4 1.5

Chart 1.—Classification of cases in relation to skull damage.

dizziness persisted beyond a year and a half, very little opportunity for recovery occurred, as in only 3 per cent of the cases did this complaint end between one and a half and five years after injury.

In this series it appears that there are three distinct types of dizziness: (1) true vertigo; (2) postural dizziness, and (3) general dizziness.

True vertigo is caused by a marked destruction of the peripheral portion of the vestibular nerve, which includes the end-organ and the extracerebral part of the eighth nerve. It is associated with extreme disability and is accompanied by staggering gait, nausea and vomiting. This type is strictly rotatory; objects move about in a circle, and there is usually an associated nystagmus. There is only one patient complaining of this type of vertigo in this series. Following a lapse of three weeks, this marked vertigo subsided, and dizziness of the postural type developed.

The second type of dizziness is of a milder degree and is definitely related to posture. It occurs in attacks lasting from one to five minutes. It is caused by stooping, rapid movements of the head in any direction, exertion, sudden changes in temperature, exposure to sunlight, riding in elevators or going on heights. This dizziness is extremely difficult to describe, the patients calling it "unsteadiness, giddiness, objects going black or gray before their eyes, and wavering or a swaying." They all firmly insist that it is not rotatory.

General dizziness is never a clear-cut clinical picture. Occasionally the patients describe a true rotatory variety and at other times that of a postural type. The attacks may persist for an entire day or may last only a few minutes. More often these patients present true cases of posttraumatic psychoneurosis and have other phenomena of a neurotic type.

For an accurate analysis of vertigo, the vestibular tests are of extreme value. In this series, forty-six patients have had vestibular tests, forty-one performed by Dr. Isaac H. Jones and five by Dr. Frederick Linthicum. Of these forty-six patients, forty showed abnormal responses and gave definite evidence of a brain lesion, while six gave normal responses. Of these six patients with normal responses, two did not complain of dizziness, and the four who complained of dizziness described that of a general type. All of these four patients had a marked posttraumatic psychoneurosis. It may thus be concluded that, after a head injury, patients complaining of dizziness usually demonstrate abnormal vestibular manifestations, and should the vestibular observations be normal these patients should be carefully studied to rule out psychogenic dizziness and malingering.

Twenty patients complained of postural dizziness, and each of these, on vestibular examination, demonstrated a peripheral lesion of the eighth nerve. One may thus assume that, when postural dizziness occurs, the vestibular tests will generally demonstrate peripheral pathologic changes.

Dizziness of the general type occurred in ten patients. Vestibular examination suggested the location of one lesion in the supratentorial and five lesions in the subtentorial region. Four cases showed normal responses. It may be concluded that general dizziness may exist with either normal or abnormal vestibular conditions and that the vestibular observations do not localize the lesion to any one constant specific area, as the lesion may be either supratentorial or subtentorial. The vestibular tests may demonstrate an intracranial lesion, but this does not necessarily mean that the dizziness the patient complains of is due to a pathologic change in the central nervous system.

There were sixteen patients in this series of forty-six who did not complain of dizziness; four had supratentorial lesions, ten had subtentorial lesions, and two did not show any evidence of brain involvement. The vestibular tests may demonstrate an intracranial lesion, but this does not necessarily mean that a complaint of dizziness is essential.

The recovery from mental changes, nervousness, visual complaints, fatigue, insomnia, body pains, gastric symptoms and the like usually occurred in the first year and a half. If these symptoms existed beyond a year and a half, recovery rarely occurred.

In this series, the neurologic signs, as previously mentioned, occurred in 32.5 per cent of the patients. The most frequent of these was diminished hearing, occurring in 13 per cent; mental changes and motor weakness in 9 per cent; involvement of the ocular muscles in 7 per cent and involvement of the optic nerve and defects of the visual field in 3.5 per cent, while disturbances of smell, facial numbness and

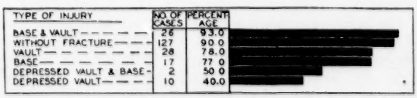

Chart 2.—Cases with symptoms in each type of injury.

stereognostic disturbances occurred to a lesser degree (chart 6).

It is quite apparent that fractures involving the base more frequently show neurologic signs than any other group. This fact can be readily explained because the cranial nerves all have their exits through the base. In 44 per cent of the cases with depressed skull fracture, neurologic signs developed. By reference to chart 3 it may be noted that the occurrence of neurologic signs in depressed fractures was less than in any of the other groups. However, in spite of the fact that neurologic signs developed in such a small percentage, these signs usually were permanent and more incapacitating, primarily because of brain involvement. If the neurologic signs persisted beyond a year and a half, recovery did not occur.

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The neurologic signs persisted over a period of five years in the following proportions: first cranial nerve, 17 per cent; second cranial nerve, 40 per cent; third, fourth and sixth cranial nerves, 6 per cent; fifth cranial nerve, 25 per cent; seventh cranial nerve, 17 per cent; eighth cranial nerve, 40 per cent; ninth cranial nerve, 100 per cent; mental disturbances in 44 per cent, motor weakness in 28 per cent, stereognostic disturbances in 7 per cent and visual field defects in 33 per cent.

RESULTS OF TRAUMA AFFECTING VARIOUS NERVES

Olfactory Nerve.—Anosmia occurred in seven cases (2.7 per cent). It was most common in basal fractures and was entirely absent in depressed fractures of the vault as well as in those cases without fracture. When this sign once appeared it remained for eighteen months in 83 per cent, these cases being followed only for that period of time; in 17 per cent it was present at the end of five years. In no single case was improvement noted. From this series it appears that once anosmia has occurred the probability of recovery is poor.

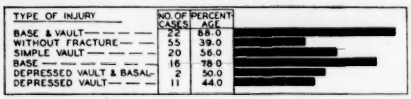

Chart 3.—Cases with signs in each type of injury.

Duration of Signs (Percentage)

Cranial Nerves	Cases	1 Day to 3 Months: Ended	1 Day to 3 Months: Present	3 to 18 Months: Ended	3 to 18 Months: Present	18 Months to 5 Years: Ended	18 Months to 5 Years: Present
First	7	..	..	..	83	..	17
Second	9	..	..	..	60	..	40
Third, fourth and sixth	17	29	18	6	41	..	6
Fifth	4	50	25	..	..	..	25
Seventh	17	35	18	12	18	..	17
Eighth	20	12	8	8	32	..	40
Ninth	1	..	..	..	..	..	100
Mental	24	12	8	8	28	..	44
Central	22	14	14	14	28	..	28
Parietal	4	25	..	..	..	..	75
Temporal, Occipital	9	11	..	..	56	..	33
Cerebellum	2	50	..	50	..	..	..

Optic Nerve.—Reduction of vision, following a brain injury, is usually due to a fracture of the bony canal containing the optic nerve, with consequent hemorrhage into the sheath, or to actual laceration of the nerve within the canal, or to both. Occasionally the resultant loss of vision may be due to a fracture of the anterior clinoid (Otto Barkan and Hans Barkan). Evans believes that cases evidencing temporal or nasal blindness may be due to a contrecoup contusion of the nerve through its being forcibly driven against the bony boundaries of the foramen. Basal fractures, more frequently than the other types of injury, caused involvement of the optic nerve. Eight of these patients with second cranial nerve signs had primary optic atrophy, while only one demonstrated secondary optic atrophy. None of these cases under our observation showed any improvement in vision at any time. It seems apparent that, once primary optic atrophy occurs, improvement of vision is unlikely.

Oculomotor, Trochlear and Abducens Nerves.—The third, fourth and sixth cranial nerves were affected in seventeen patients (7 per cent). Again basal fractures predominated. However, there are five vault fracture cases in which eye muscle changes arose. The prognosis for the recovery from symptoms referable to these cranial nerves is much better than for either of the aforementioned nerves. Thirty-five per cent of the cases with these eye signs cleared up within a period of eighteen months; the remaining 65 per cent still showed the signs present when observation of them ended at periods varying from three months to five years after injury. Many of these patients, though complaining of blurred vision, double vision or photophobia, did not have organic manifestations that could account for such symptoms. Nineteen per cent of our entire number of patients had symptoms referable to these nerves, whereas only 7 per cent demonstrated positive neurologic signs. Some of these people had errors of refraction, which, when corrected, relieved a small proportion of their symptoms. The majority, however, were not relieved, and their eye symptoms could be explained only by an associated neurosis.

Trigeminal Nerve.—The trigeminal nerve is rarely injured after head trauma, only four cases occurring (1.5 per cent) in this series. In all four cases the mandibular division was affected. The anesthesia resulting therefrom was only partial, and return of sensation occurred in 50 per cent of the cases within a period of three months. In the other 50 per cent, the signs were still present when our observation ended, from three months to five years after injury. In one case a total anesthesia of the mandibular division persisted over a five year period. The prognosis for return of sensation following injury to the trigeminal nerve is excellent.

Facial Nerve.—Facial paralysis occurred in seventeen cases (7 per cent). Fractures of the base again predominated. Forty-seven per cent of these patients recovered in a period of eighteen months. Recovery from facial paralysis is the usual sequence of events.

Auditory Nerve.—Thirty-two patients (13 per cent) had diminished hearing. Diminished hearing may be caused by cochlear damage or middle ear hemorrhage or fracture of the ossicles. The audiometer is the most accurate means of testing the auditory function. When the cochlea is damaged, hearing will probably never return. As a whole, the prognosis for the return of hearing following a head injury is not favorable.

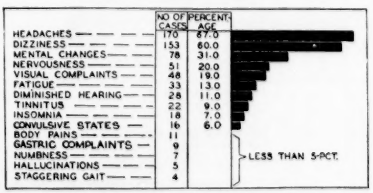

Chart 4.—Frequency of symptoms in the entire series.

Glossopharyngeal Nerve.—The glossopharyngeal nerve was involved in only one case, while the vagus, the spinal accessory and the hypoglossal were never injured.

MENTAL CHANGES

Mental changes, consisting of disorders of the mental faculties with changes in character and habits, and associated with unreasonable and purposeless action and language, exclusive of epilepsy, form a large group of

the posttraumatic head signs. Twenty-four cases (9 per cent) of the entire series showed these symptoms. Of this group the milder type showed recovery within the first year and a half, but the more severe types of mental changes did not improve. Three patients had to be confined in institutions, and practically all the others would have been thus confined had they not had some one to take care of them at home. For the more severe types of mental changes, the age or the type of injury had very little to do with the onset. Mental changes predominated in fractures of the base, whereas they occurred to a lesser degree in those cases without fracture and those with fracture of the vault. The question of traumatic insanity is one of great importance and has been previously discussed by Adolph Meyer.

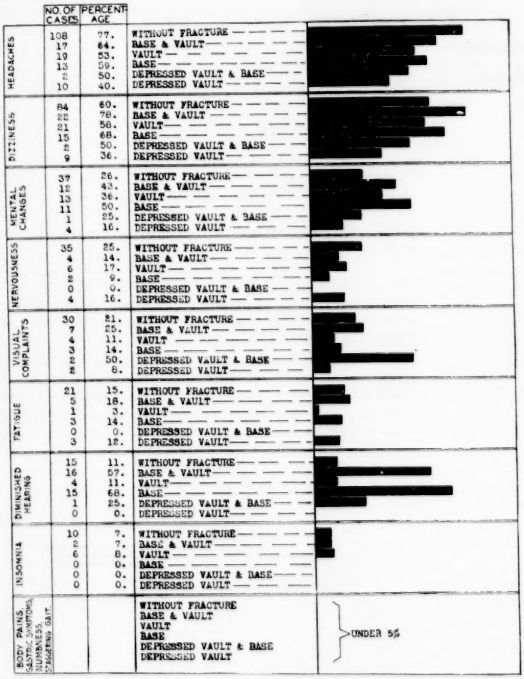

Chart 5.—Frequency of symptoms in each type of injury.

Central Area.—Under involvement of the central part of the brain, we have considered the postcentral and precentral gyri. We have excluded the cases of focal epilepsy which naturally are caused by trauma to the motor area, and will consider them separately under "convulsive states." Weakness, or paralysis, unilateral in origin, occurred in twenty-two patients (9 per cent). The fracture series predominated. The prognosis for recovery from a hemiplegia was very good, only 28 per cent going on to a permanent paralysis. Failure of recovery was more common in the group of depressed fractures.

Parietal Lobe.—Astereognosis occurred in only four cases (1.5 per cent). Seventy-five per cent did not show recovery within a five year period.

Occipital and Temporal Lobes.—Defects of the visual field were present in nine cases (3.5 per cent). The cases without fracture rarely showed defects of the visual field, while the depressed fractures more commonly gave evidence of this neurologic condition. The prognosis of defect of the visual field was poor, as only 11 per cent of the patients recovered while under observation.

Cerebellum.—Staggering gait and other cerebellar manifestations occurred in only two cases (0.7 per cent); both of these patients recovered.

Convulsive States.—In this series there were sixteen patients (6 per cent) in whom convulsive states developed. Convulsive states following trauma may be divided into three groups: focal epilepsy, true epilepsy and hystero-epilepsy. The diagnosis of a convulsive state due to a posttraumatic psychoneurosis as distinguished from true epilepsy is sometimes extremely difficult, as we are more often dependent on the patient's history than on actual observation of the attack. In five of these cases, focal epilepsy developed, three of these following a depressed fracture; one in a case of combined fracture of the vault and base, and one in a case without skull fracture. The onset of the seizure in three cases was after nine months, and in two cases within three months. In those cases in which the seizure developed within the three months period, a brain abscess was the etiologic factor, and, in addition to the convulsive seizure, these cases showed signs of chronic intracranial pressure. True epileptic seizures occurred in four patients; in two with vault fractures, and in one with a combined vault and basal fracture. The onset of these seizures occurred from nine months to five years after the injury. In seven cases a diagnosis of hystero-epilepsy was made associated with posttraumatic psychoneurosis. Six of these patients did not have a skull fracture and one had a basal fracture. It is extremely important to note that in all these cases the convulsive states developed within one to two months after injury, and, in all of these, psychotherapy, readjustment of their difficulties, plus sedatives, entirely relieved the symptoms. It is interesting to note that in these functional cases the symptoms developed much sooner following the injury than in those cases in which true epilepsy occurred, as previously described.

Aphasia.—There were sixteen patients in the series in whom aphasia developed. Six (37 per cent) instances occurred in cases without fracture. Five patients had sustained both vault and basal fractures, and four had depressed vault fractures, whereas only in one patient with depressed vault and basal fracture did this symptom develop. Ten patients (63 per cent) had a partial motor aphasia; four cases (25 per cent) showed both motor and sensory aphasia. The age distribution was about equal, varying from 21 to 78 years in the patients who recovered and in those permanently

affected; hence the age factor apparently has little influence on the prognosis for recovery. In only one case did pure sensory aphasia develop, and it had cleared up at the end of seven months. Four cases showed combined motor and sensory types, and one case without fracture presented a complete motor aphasia.

The types of pathologic conditions present in these patients were as follows: There was subdural hematoma in two and intracerebral hemorrhage in three; in two there were brain abscesses, both of which were surgically drained, resulting in improvement of the aphasia, and in three actual destruction of brain tissue existed.

Seven (44 per cent) of the injured patients who suffered from aphasia became entirely cured of that condition, six of them within eight months; the remaining patient had recovered from his aphasia by two and one-half years after his injury was received. At that time he returned to work but was still slow in interpreting sentences. A few months later, an abscess of the temporal lobe was drained.

The nine patients who did not recover were followed from eighteen months to five years, with two exceptions who left our observation eight months after injury. The prognosis appeared bad for recovery at any future date in all nine.

Unconscious Period.—A careful review of this series of cases for the effects of unconsciousness on the ultimate outcome of the patient was carried out. In brief, the period of unconsciousness was in no way directly related to the type of skull injury. However, the patient without skull fracture was less likely to be rendered unconscious than the one with skull fracture. The period of unconsciousness was in no way related to the appearance of symptoms or signs, as headaches, dizziness, and the like would develop in a patient who was not unconscious as often as in the patient who lost consciousness. However, there was evident some general relationship between the existence of unconsciousness and the duration of symptoms or signs. Patients who were not unconscious might have symptoms and signs continue to the end of the five year period. However, they were less likely to have these evidences prolonged over this period than were those who were unconscious. Symptoms persisted for five years in 9 per cent of the patients who did not lose consciousness, while in those who lost consciousness from one minute to six days there was no marked difference in the duration of symptoms, which lasted for five years in about 25 per cent. In 50 per cent of the patients who lost consciousness from one week to four weeks, the symptoms persisted for five years.

Disability.—The cases have all been reviewed from the standpoint of the ability of the injured to carry on work, even though some of the cases were not industrial. Total disability is designated as the period when the patient is unable to carry on any form of labor; partial disability as that when so much improvement has occurred that he can do part time or light work. Permanent disability indicates that the patient has some permanent defects in the form of symptoms or signs which are not expected to improve for the remainder of his life. From 5 to 15 per cent of the patients, varying with the type of injury, were able to resume their usual occupation within thirty days from the time of injury, and approximately 50 per cent were able to return to work within one and a half years. In 8 per cent of the cases without fracture, a permanent disability developed. However, the fracture cases had a more serious outcome: from 16 to 25 per cent of the patients suffered total permanent disability, rated industrially at 100 per cent, and, of the patients with basal fractures, from 25 to 50 per cent were incapacitated for doing one half of their ordinary amount of work permanently after the injury, receiving a rating of over 60 per cent.

CONCLUSIONS

1. Positive neurologic signs occurred in 32.5 per cent of these cases, while 80 per cent of them presented subjective complaints.

2. In the cases without fracture, 18.5 per cent had positive neurologic manifestations, while in 90 per cent there were subjective complaints.

3. Positive neurologic findings predominated in fractures involving the base primarily because of pathologic changes in the cranial nerves.

4. Subjective complaints and neurologic signs occurred less frequently in depressed skull fractures than in any of the other types.

5. If symptoms and signs lasted beyond a year and a half, the prognosis for ultimate recovery was poor. Their duration was in no way related to the type of fracture.

6. Vestibular tests performed on these patients indicated that some portion of the vestibular apparatus

	NO OF CASES	PERCENTAGE
CRANIAL NERVES		
I	7	2.7
II	9	3.5
III IV VI	17	7
V	4	1.5
VII	17	7.
VIII	32	13.
IX	1	00.3
CEREBRAL LOCALIZATION		
MENTAL	24	9.
CENTRAL	22	9
PARIETAL	4	1.5
TEMPORAL, OCCIPITAL	9	3.5
CEREBELLUM	2	0.7

Chart 6.—Frequency of signs in entire series.

was usually involved. The involvement of the vestibular apparatus did not necessarily denote that the dizziness complained of was due to a vestibular lesion, nor do positive vestibular observations necessarily mean that dizziness exists; when postural dizziness or true vertigo is present, the vestibular tests invariably demonstrate a pathologic condition.

7. The younger the patient, the less was the probability of serious damage; while the older the patient, the more likely it was that symptoms and signs would develop.

8. Symptoms and signs usually develop shortly after injury. However, convulsive states and mental changes may occur at a later period. This excludes neurologic signs developing from late hemorrhage, abscess or meningitis.

9. A smaller proportion (9 per cent) of the patients who did not lose consciousness at the time of injury had symptoms and signs that extended over a period of five years than did those who became unconscious (25 per cent).

10. Hysterical convulsive states occurred from one to two months after injury, whereas organic convulsive states generally first made their appearance from eight months to five years after injury.

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ABSTRACT OF DISCUSSION

DR. LEWIS FISHER, Philadelphia: The presentation of Drs. Glaser and Shafer bears out my own experience that in most cases of head injuries vertigo is a common symptom. Frequently when there is a medicolegal problem involved one is called on to pass judgment in cases in which the patients complain of dizziness. In the course of his occupation an individual may be injured by an automobile, a trolley car or a train and may complain of dizziness as the predominating symptom. The question of dizziness is not clearly understood as yet. I think that the classifications of dizziness or vertigo are inaccurate. It would perhaps be better to understand by "dizziness" a state in which the vestibular mechanism, the mechanism assigned normally to prevent the individual from being dizzy, is somehow affected. In a normal individual the brain is continuously informed, consciously or subconsciously, of the position of the body and its parts. The individual instantly and automatically becomes aware of any change in position of any portion of his body, enabling him to make the necessary adjustments. When something pathologic occurs which interferes with his proper "motion-sensing," as a result of which he is not made aware instantly of any and all changes of position, or if something occurs which prevents him from orientating properly, he evidences the confusion of his equilibratory sense by various types of vertigo or dizziness. I believe that every type of vertigo, whether it is a severe rotary type in which the individual is unable to sit up or execute any act of precision without being greatly disturbed, or whether it is the slight sense of uncertainty in which the individual doesn't feel himself "quite at home," is essentially a disturbance of the same mechanism and that the difference in type is only a question of the severity of the disorder. In brain injuries in which the individual presents obvious and gross neurologic phenomena, one never questions the existence of vertigo if it is presented as a symptom. But if an injured individual complains of vertigo and does not show any gross clinical manifestations of injury, he is usually regarded as a malingerer or, to be charitable, a psychoneurasthenic. Some time ago Dr. Francis Grant and I, and on another occasion Dr. Glaser and I, studied and reported more than 100 proved cases of gross brain lesion which had been carefully examined vestibularly. In those cases it was definitely proved that brain lesions produce certain characteristic disturbances in the vestibular responses, and I feel that I am justified in my belief that an individual who shows these characteristic disturbances in vestibular responses does have some form of brain injury, even though he does not show gross clinical evidences of any sort.

DR. E. D. FRIEDMAN, New York: I should like to offer some clinical support for the assumption of organic changes in the brain in cases of skull trauma. I have had the opportunity of carrying out encephalographic studies in twenty cases of injury to the head (four previously reported and sixteen recently studied). In the group of cases recently studied, eight presented definite evidence of fracture of the skull; in two it was suggestive; two of the cases exhibited subarachnoid bleeding following the initial trauma, but in the majority there was evidence of neither fracture of the skull nor subarachnoid bleeding. There were nine cases of posttraumatic epilepsy; six showed objective signs of a residual focal lesion in the brain. In one of the cases there was evidence of a gross lesion in the substance of the brain without subarachnoid bleeding or fracture of the skull. I have recently had occasion to observe a similar instance of intracerebral bleeding following a skull injury. At autopsy a large intracerebral hemorrhage was found without signs of vascular disease of the cerebral vessels. There was also no evidence of fracture or subarachnoid hemorrhage. In all but one of the cases studied, definite changes in the encephalogram were demonstrable. These consisted of dilatation of the ventricles, considerable accumulations of air on the convexity of the brain, and migration of the ventricular system toward the site of the lesion. These deviations from the normal were found either separately or in combination. No sweeping conclusions can be drawn from this small group of cases. Yet the encephalographic observations were so uniformly abnormal that they are a bit suggestive of an organic basis for some of the symptoms of the posttraumatic state. (By the term posttraumatic state I mean the symptom complex following a skull injury which is accompanied by a period of unconsciousness and in which there may or may not be evidence of fracture of the skull or subarachnoid bleeding.) In a number of the cases, signs of focal disease were demonstrated; but even in those showing only general symptoms a similar process probably forms the basis of the complaints. I believe that in cases of skull injury there may be all grades of hemorrhage, from punctate size up to gross macroscopically demonstrable extravasations. One must bear in mind that the symptoms of the posttraumatic cerebral general syndrome (Foerster) are more or less identical with those observed in arteriosclerotic disease of the cerebral vessels and that the same grouping of symptoms is encountered in all parts of the world without any apparent opportunity for collusion between the injured persons.

DR. MARK A. GLASER, Los Angeles: I have been reticent in the use of encephalography for the relief of posttraumatic sequelae, as I do not believe that we are in a position at present to choose the case wherein relief may be assured. I do encephalography in a perpendicular position and do not try to fill the ventricles, though the ventricles are outlined in practically all the cases. From a review of the literature, it appears that those cases in which air fails to visualize the cortex are the cases in which relief from subjective symptoms is more likely to occur. Both Dr. Fisher and Dr. Friedman have clearly shown that organic pathologic changes are present, Dr. Fisher by means of neuro-otologic tests and Dr. Friedman by encephalography. A combined study of neuro-otologic tests and encephalograms will do much to solve the problem of therapeutic relief. In view of the fact that dizziness is so frequently associated with abnormal vestibular phenomena, it would seem illogical to attempt to alleviate this condition by encephalography. This procedure should be confined to the cases with headache.

THE BASIS FOR MANAGEMENT OF URETERAL CALCULI

BASED ON THE STUDY OF FIVE HUNDRED AND SIXTY-FIVE CASES *

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The management of ureteral calculi still appears to be the controversial point in urology, as may be judged from the recent widely divergent reports by various workers. Bumpus and Thompson,[1] in the analysis of 1,001 cases treated at the Mayo clinic, report that calculi were removed surgically in 480 cases. In 250 cases the stone was situated in the lower third of the ureter. Barney and Chute[2] report a still higher operative incidence: 51.2 per cent in a series of 123 cases. Mathé[3] stated that in his opinion every stone measuring more than 0.6 cm. in diameter should be removed by operation. On the other hand, Squires,[4] in his report on the work done at the Crowell clinic, cites 87.13 per cent of stones removed by cystoscopic manipulations in a series of 606 cases.

Some years ago I made an attempt to rationalize the basis for management of ureteral calculi by a clinical study of the relative incidence of renal changes resulting from calculous obstruction after a lapse of various lengths of time and by analysis of various

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Bumpus, H. C., and Thompson, C. J.: Stone in the Ureter, Surg., Gynec. & Obst. **50**: 106 (Jan.) 1930.

2. Barney, J. D., and Chute, Richard: The Management of Calculi in the Lower Ureter, J. Urol. **25**: 173 (Feb.) 1931.

3. Mathé, C. P.: The Present-Day Management of Stone in the Kidney, J. A. M. A. **96**: 657 (Feb. 28) 1931.

4. Squires, C. B.: Disposition of Ureteral Calculi at the Cornell Clinic from 1915 to March 31, 1930, J. Urol. **24**: 461 (Nov.) 1930.

mechanical factors which safeguard the kidney against infection and hydronephrosis.[6] Including recurrences and bilateral cases, this series represents 589 stone problems. The increased number of cases, coupled with additional facilities for study afforded by intravenous pyelography, have but deepened my firm conviction that, with the understanding of the various clinical phenomena incidental to calculous obstruction in the ureter, a higher plane of efficiency may be attained in the management of these cases.

GENERAL CONSIDERATIONS

That a stone may be lodged in a ureter for a considerable length of time, without seriously hampering kidney drainage and without producing pelvic infection or extensive changes marked by hydronephrosis or a chronic pyelonephritis, has been a matter of common knowledge. The only signs of damage may be evidenced by slight diminution in the output of the dyes, the presence of a few leukocytes in the kidney specimens of urine, and a varying degree of pelvic retention. I stated five years ago and, thanks to the introduction of intravenous pyelography, I am more firmly convinced now, that, barring the occurrence of acute renal infection, marked hydronephrotic changes associated with extensive destruction of the kidney parenchyma are rare during the first year of the disease. Bumpus and Thompson have encountered only forty-nine such cases in which nephrectomies had to be performed, while in this series there were ten.

There were thirty-five cases of acute renal infection in this series, mostly of the pyelitis type, which in all but two instances abated subsequently, either following the removal of the stone or through the establishment of drainage with the aid of indwelling catheters. The infection of the acute type was so severe in two cases that nephrectomy had to be performed. Pyelitis of more chronic nature was evidenced in twenty-five cases. As previously mentioned, in ten cases the stones were allowed to remain in the ureter for many years through the failure of recognizing the condition, leaving the patient with a hopelessly damaged kidney. The urine contained but a few leukocytes in forty-five instances, while in 440 cases there was no microscopic evidence of infection.

INSTRUMENTAL AND INTRAVENOUS PYELOGRAPHY

The routine injection of opaque solutions into the renal pelvis in the presence of ureteral obstruction should always be regarded as a procedure pregnant with dangerous possibilities. Unless one is assured of complete drainage, it should be avoided in cases which present no diagnostic problem, because of the severe infection it may too frequently produce. It is for this reason that instrumental pyelography was resorted to in but fifty-seven cases, chiefly in patients with uric acid calculi or those in whom the presence of the stone was not recognized for various reasons at first.

With the advent of intravenous pyelography a new, practically harmless, medium for obtaining information regarding changes taking place above the obstructing stone became immediately available. It should be used in every case of stone impaction, but its greatest value is in cases in which it is not possible to pass by the obstruction with a ureteral catheter in that it supplies the only means of delineating the ureteropelvic tract on the affected side. In addition, it determines the all important fact relative to maintenance of renal function, a feature unknown in instrumental pyelography, and frequently it affords the only medium of ascertaining the former.

The iopax (later the skiodan) studies undertaken in twelve cases of varying degree of calculous impaction in the ureter, extending for periods from five to thirty-two months, tend to corroborate the earlier observation that in the great majority of cases of chronic calculous obstruction, even of the apparently hopeless type, renal drainage is maintained. The ureteropelvic tract on the affected side was delineated in all cases down to the stone shadow and even below it, showing a surprising absence of extensive dilatation and in some cases there was no appreciable difference between the healthy and the diseased sides. In one case, in which the stone was known to have been impacted for sixteen months the obstruction was apparently complete, as numerous

Fig. 1.—Intravenous pyelogram in the case of a stone (arrow) apparently hopelessly impacted in the lower end of the ureter. Note the perfect delineation of the ureteropelvic tract on the left side and the absence of appreciable difference between the two sides. The patient passed the stone, which contained a distinct groove.

attempts to pass by the stone with the smallest ureteral catheters met failure. The elimination of the shadow casting substance was practically equal on the two sides (fig. 1). Because it was obvious that kidney drainage was maintained on the affected side, the operative intervention was deferred, cystoscopic manipulations were continued, and three months later the patient passed the stone, which measured 6 by 9 mm. and had a distinct groove on its surface.

Temporary cessation of renal function, so frequently noted in cases of acute retention resulting from a complete ureteral stone block, may produce a total absence of the dye shadow on the affected side (fig. 2). In some instances all that is noted is a rim of widely dilated calices, the dye penetrating into the spaces immediately adjoining the renal parenchyma but failing to delineate the pelvis and the ureter distended under pressure with

6. Dourmashkin, R. L.: Stone in Ureter, New York State J. Med. **26**:1 (Sept. 1) 1926.

retained urine (fig. 3). The temporary nature of such conditions should be constantly borne in mind, lest they should be mistaken for cases of serious renal destruction, in which case the dye may be similarly not excreted. An indwelling catheter draining off the urine trapped above the obstructing calculus will, as a rule, quickly restore the status quo of renal function.

What are the factors that safeguard the kidney in cases of calculous obstruction in the ureter?

1. *Grooves.* I have repeatedly called attention to the presence of linear grooves on the surface of the stone as an important mechanical factor allowing for urinary drainage in ureteral stone cases. It has been noted in numerous instances that, although the obstruction was apparently complete as determined by the failure of the smallest ureteral catheter to pass by the obstruction, urine was obtained through the catheter passed up to the stone, or indigo carmine could be seen to escape from the orifice. The stones removed in these cases showed linear channelings (fig. 4). The latter were found in 29 per cent of the specimens in this series.

It is the presence of these grooves, especially when they are well marked and deep, that explains the absence of symptoms in the so-called cases of silent ureteral calculi. A patient may go through a lifetime without ever having an attack of renal colic and yet have a large stone in the ureter, the condition being discovered in the course of a routine roentgen examination. There were three such cases encountered in this series.

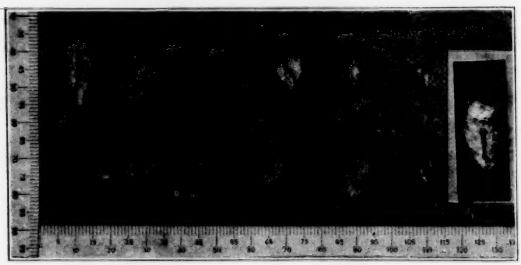

Fig. 4.—Various types of linear grooves and depressions on the surface of ureteral stones, allowing the escape of urine into the bladder. The largest on the right is a pelvic stone (courtesy of Beth Israel Hospital).

A stone may remain impacted in exactly the same spot for weeks and months, as may be readily proved by roentgenograms, and suddenly give rise to attacks of pain after periods of comparative ease. Why should this be so? Certainly, the pain in these cases did not result from the descent of the stone, which, as a rule, is marked by acute retention. I have ventured an explanation that the clogging of the grooves occurs in these cases by mucus, a blood clot or some urinary deposits, producing thereby a complete obstruction and retention of urine above the stone. The spontaneous relief often observed in such cases, if not explained by the passage of the stone, may be readily due to the washing out of the clogged material, as the result of increased hydrostatic intra-ureteral pressure.

2. *Irregular channeling.* Spiculated, mulberry-like calculi, having an eaten-up spongy appearance, owe their configuration to the urine burrowing its way to the bladder in irregular fashion all over the surface of the stone. This is another way in which renal drainage may be maintained.

3. *Floating stones.* These, acting in a ball-valve fashion, will allow renal drainage for a long time without damage to the kidney. These stones are, as a rule, oval and may be perfectly smooth. The ease with which they may be pushed up by a catheter introduced into the ureter, without eliciting the slightest sense of resistance, is well known. It is these cases, because of the migratory tendency of the stone, that may prove to be a source of embarrassment to the surgeon, who may fail to locate the calculus at the time of operation.

4. *Renal "hibernation."* This term may not be physiologically correct but it serves the purpose in that it denotes figuratively a temporary stoppage of renal activity, resulting from complete ureteral obstruction, not accompanied by destructive changes in the kidney and with a powerful tendency on the part of the latter to quick restoration to its normal function, following the removal of the obstructing agent. In such cases the kidney stops excreting water as well as solids. This process may extend even for a considerable length of time. The intravenous pyelograms may show complete absence of the dye shadow. The elimination of indigo carmine or phenolsulphonphthalein indicated such a process in that it was either greatly diminished or entirely absent in practically all cases of acute renal retention which were observed in this series and in which it was possible to drain off the trapped urine by means of a ureteral catheter. Ordinarily these substances would make their appearance within ten minutes to half an hour after reestablishment of the drainage, and if they were injected again during this period the degree of their concentration would as a rule indicate a perfect restoration of renal function.

In a considerable number of cases of acute renal retention resulting from a complete block in the ureter, in which careful clinical and cystoscopic studies were made, pain would gradually subside although complete obstruction persisted. As renal colic is produced by distention of the pelvis with urine unable to escape, the relief from pain in these cases could be readily explained by reabsorption of the retained urine. With continued failure on the part of the kidney to excrete water there is thus another mechanism safeguarding the kidney against hydronephrotic changes. That the kidney in some instances may stop excreting water even for a considerable length of time was a fact further established in two cases in this series in which the patients were operated on, one of them by Dr. H. E. Isaacs, the other by Dr. A. H. Harrigan. In both of these cases complete obstruction existed for many months and yet the ureters were found to be but moderately dilated above the stone, and when they were opened not a drop of urine was seen to escape from above. In both cases complete restoration of renal function followed the removal of the calculi.

The presence of so-called hopelessly impacted calculi in the ureter, therefore, as may be apparently determined by cystoscopic investigation, is not a criterion justifying a surgical operation and should not be viewed with undue alarm as there are a number of mechanisms operating either for allowance of urinary drainage or preservation of renal integrity. Provided the patient is under continuous surveillance, provided there is neither clinical nor cystoscopic evidence of infection and,

finally, provided the position and the size of the stone are favorable to its removal by conservative measures, the calculus may be allowed to remain in the ureter for weeks and even for months before a surgical operation is considered with the hope that it may be made to come down by cystoscopic manipulations. It must be borne in mind, however, that when a kidney ceases to excrete water the intra-ureteral hydrostatic pressure essential for expulsion of the stone will be wanting, and if anything is to be expected from cystoscopic manipulations, unless the stone is in the intramural portion of the ureter, reestablishment of kidney drainage by indwelling catheters becomes essential.

TREATMENT

There is undoubtedly a large number of patients who pass stones without presenting themselves to a physician's attention. In this series practically all patients were submitted to cystoscopic manipulation, so that it is difficult to estimate what percentage of the patients would have passed stones had they been left alone.

The cases may be divided into two large groups: acute cases and chronic cases.

Acute Cases.—These are patients who were seen either during the first attack of renal colic or recently. As stated before, undoubtedly in a large percentage of cases in this group the stone could probably be passed without cystoscopic assistance. In most of the patients in this group the stone was small, measuring anywhere from 2 to 5 mm. in its width, and was usually expelled after the first intra-ureteral manipulation. In these cases very small stones may frequently give rise to complete retention owing to edema of the ureteral mucosa, which acts as a contributory factor in producing the block. In a number of instances the patient may be seen either during or shortly after the first attack with a large stone, which may be situated even in the lower end of the ureter. In such cases the latter is usually well dilated, because of some obstructive lesion below, such as a kink or a stricture, or of some extraneous factor, such as pressure exerted by a gravid uterus. It is during pregnancy, indeed, that a good many of these patients are seen. Even in such cases the mere passage of an ordinary catheter into the ureter may be promptly followed by the expulsion of a large stone.

Cystoscopic intervention is indicated in all cases presenting the clinical picture of acute renal retention, for no better reason than to establish drainage and by doing so prevent infection. Once the operator succeeds in passing by the obstruction with a catheter, the relief is instantaneous and almost spectacular. It was possible to do so in 114 out of 137 cases of acute renal retention in this series. The urine will be seen to escape through the catheter with great force, sometimes in a continuous stream. Although only a small percentage of cases show evidence of severe renal infection as a result of calculous obstruction, there are no better means available to combat the infection, if such has already taken place, than through the establishment of drainage by means of an ordinary catheter. Unless the stone is seen to protrude from the ureteral orifice, no other procedure is required than the passage of catheters in acute cases. Metallic dilators, rubber bag catheters or any other massive instruments should not be used during an acute attack.

Indwelling Catheters: The procedure is of the greatest value in acute cases. Including chronic cases, it was resorted to in 237 cases in this series. Its usefulness, however, is limited in chronic cases in which the calculus is usually of a larger size, because ordinary catheters do not produce sufficient dilatation to allow the stone to go through. In acute cases the catheters may be left indwelling anywhere from one hour to several days.

Fulguration of the Ureteral Mound: Occasionally the edema of the mound may be found so extensive that it may not be possible to catheterize the ureter because of failure to locate the orifice. Injection of the blue dye, in order to visualize the latter, is, as a rule, of no value, because of a complete block produced by the stone. In a previous publication on this subject I [10] reported a number of cases in which complete amelioration of symptoms, subsidence of the edema and subsequent passage of the stone followed the fulguration of the edematous mass. The high frequency spark should be applied very sparingly in these cases.

Chronic Cases.—It is in this group that the proper application of the modern cystoscopic technic may result in considerable reduction of open operations, especially when the stone is situated in the lower end of the ureter. In these cases the calculus, as a rule, measures more than 0.5 cm. in width and there is a history of repeated attacks of renal colic. The figures cited in table 3 represent probably a true index of what can be done with ureteral calculi, as they reasonably preclude the possibility of spontaneous passage of the stone. The stone in the chronic case is arrested on its way down because of two factors: impaction and relative narrowing of the ureter. The treatment should be directed toward the removal of these obstacles.

Impaction: The same principles governing the treatment of acute cases should be applied here, but they should be followed by sufficient dilation of the ureter below the stone as soon as impaction is broken up.

Dilation of the Ureter Below the Stone: It is clear that relative narrowing of a ureter prevents the spontaneous expulsion of the stone into the bladder and, as a rule, the latter cannot take place unless the ureter is dilated to the size conforming as nearly as possible to that of the calculus. In many cases in this series, in which it was not possible to break up the impaction and pass even a filiform bougie by the obstruction, mere dilation of the ureter below the stone, carried to a sufficient degree, has resulted in the delivery of the stone. The following methods were used in this series to provide enough room for the passage of the stone:

Ureteral meatotomy. This procedure was resorted to in 104 cases. It may be considered harmless, although in one case an alarming hemorrhage ensued from its use. In one case of two and a half years' duration a large stone was actually seen to pop out of the ureter immediately after the slitting of the orifice. Only plain cystoscopic scissors should be used for this purpose. The use of a high frequency current, calculated to enlarge a normal looking orifice, I believe, is contraindicated because of troublesome secondary edema it produces, which will render subsequent intra-ureteral manipulation difficult. In one case complete atresia resulted from fulguration of the orifice, so that a subsequent nephrectomy became necessary. Exceptions to this rule are cases in which the stone is impacted in the intramural portion of the ureter, as in such instances it may not be possible to introduce plain scissors or other instruments. In a number of cases in this series very large calculi were released by applying a fulguration spark over the ureteral mound until the stone was

10. Dourmashkin, R. L.: The Value of Fulguration in the Treatment of Stones Incarcerated in the Vesical End of Ureter and Complicated by Extensive Edema of Ureteral Mound, J. Urol. **18**: 99 (July) 1927.

reached. It is important, however, that the intramural portion of the stone be accurately determined, as the procedure will be useless should the calculus be lodged but slightly higher up.

Author's tunneled bougies. These were devised for producing ample dilatation below the stone (fig. 5) and have been in use for nearly seven years.[11] They are tunneled, metallic sounds which can be screwed into a tapering ureteral catheter. They are 2 cm. in length and they run in sizes from 12 to 20 F. I know of no other single agent employed in this work which could claim a higher credit for the successful outcome in difficult cases than this device. The bougies are best suitable for dilation of the lower end of the ureter, especially of the intramural portion, which is the most difficult part to stretch. Frequently, a meatotomy is necessary to enable the introduction of the smallest bougie. In 105 cases in which the stone measured 0.5 cm. and more and in which bougies were used, 89 patients passed the stone, 3 were lost from observation and but 13 were operated on.

Author's rubber bag catheters. The device was described in 1926[12] and has been used since then in sixty-five cases. It consists of an ordinary ureteral catheter over the distal end of which a small rubber bag is capped and tied below the eye of the catheter. The

Fig. 5.—Dilation of the lower end of the ureter, below the stone (arrow) with author's tunneled bougie.

inflation may be produced with some opaque solution so that the extent and character of dilatation and its relation to the stone may be studied (fig. 6). It is a powerful dilator but its use is best adapted in stones situated higher up in the ureter. Its actual value as a factor in bringing down stones situated in upper or middle parts of the ureter may be questioned, as calculi so situated frequently drop down through the anatomically wider middle segment of the ureter without any instrumental aid or following the passage of an ordinary ureteral catheter. After the stone has reached the lower end of the ureter, the use of tunneled bougies becomes an important factor. Its greatest value lies in dilation of the narrow portion of the ureter immediately below its junction with the pelvis in cases of small pelvic calculi, and in the treatment of stones situated at points from 7 to 10 cm. above the bladder.

Forcible extraction of stone. Various instruments have been devised for the removal of stone by force, but their use, I believe, unless the stone is actually seen to protrude from the orifice, is pregnant with dangerous possibilities. However successful the isolated reports may appear, the general use of these instruments should not be encouraged as it tends to unpopularize the cystoscopic management of ureteral calculi. Their rationale is questionable, because for any successful extraction of stone by force the ureter must be sufficiently dilated; but in such an event the stone will pass unaided.

FREQUENCY OF TREATMENT

The edema induced by intra-ureteral manipulations frequently holds the stone back and must be allowed to subside. It is for this reason that in the majority of cases the stone will not pass for a number of days following the last treatment. An interval of at least one week should be allowed to elapse between treatments. If the dilation has been ample and little or no edema is present, the stone may slip out of the ureter without colic; but ordinarily the expulsion of the stone is preceded by an attack of renal pain. In severe cases of renal retention following intra-ureteral manipulations, which show no tendency to subside spontaneously and are not relieved by injection of sedatives, cystoscopy should be done again irrespective of the time of the last treatment to drain off the trapped urine.

Some patients will not pass even a small stone for a long time after ample dilation of the ureter, undoubtedly because of the lack of *vis a tergo* necessary for its expulsion. In all such cases the stone will be forthcoming even after a lapse of many weeks, if the patient is left alone.

ACCIDENTS AND COMPLICATIONS RESULTING FROM CYSTOSCOPIC TREATMENTS

In 1,467 cystoscopic manipulations, which include the initial examination, there were no instances of mortality. What has been considered by most of the authors as the simplest method of inducing the expulsion of ureteral calculi, that is, the passage of an ordinary ureteral catheter, has been in my experience the cause of most of the complications. Pelvic infection was the condition most frequently encountered (twenty cases). Not a single case of infection has followed the use of tunneled bougies or rubber bags, undoubtedly because they were used in carrying out dilation of the ureter *below* the stone. It may be readily seen that any instrument, however innocuous, when passed above the point of obstruction may carry micro-organisms into an area most suitable for their growth, that containing retained urine. In one instance a colon bacillus bacteremia followed the use of an ordinary indwelling catheter. The patient recovered. In one case severe hemorrhage followed the slitting of a ureteral orifice with scissors which necessitated a suprapubic cystostomy for the removal of blood clots. In the same patient, cystoscopic manipulation was undoubtedly a life-saving procedure on a previous occasion, as he came under observation with anuria due to bilateral calculous obstruction, which was unblocked with indwelling catheters. Subsequently the patient passed the stones from both ureters. In one case a nephrectomy had to be performed owing to a complete atresia of a ureteral orifice, resulting from an attempt to enlarge it by means of a fulgurating spark. The other complications were: cystitis, six cases; urinary fever, two cases; urohepatic syndrome,[13] one case; acute epididymitis, one case; posterior urethritis, one case.

ADVANTAGES OF CYSTOSCOPIC MANIPULATIONS

The advantages of cystoscopic manipulations are chiefly economical. Ureterotomy in the hands of an experienced surgeon should have a low mortality.

11. Dourmashkin, R. L.: A New Tunneled Ureteral Bougie for Dilatation, Catheterization and Irrigation, J. Urol. & Cutan. Rev. **28**: 70 (Feb.) 1924.

12. Dourmashkin R. L.: Dilatation of Ureter with Rubber Bags in the Treatment of Ureteral Calculi, J. Urol. **15**: 449 (May) 1926.

13. Dourmashkin, R. L.: A Urohepatic Syndrome, J. A. M. A. **90**: 908 (March 24) 1928.

Bumpus and Thompson report but nine deaths in 480 patients with stone in the ureter operated on. Yet to a wage earner or to a small business man a major operation, incapacitating him as it does for a number of weeks, brings, as a rule, untold sufferings to himself and to his family. It may too frequently result in the loss of the job. Fully 75 per cent of patients treated in this series were of the wage earning class. Any procedure rendering a patient with limited means ambulatory has a particular appeal to him.

In recurrent cases the advisability of cystoscopic manipulations to obviate the necessity of repeated operations is apparent. There were twenty-eight recurrences in this series but, curiously enough, but three were on the same side.

TABLE 1.—*Analysis of All Cases of Stone in the Ureter in This Series*

Location	Total Cases	Passed	Operative Removal	Lost from Observation: Completely	Lost from Observation: Apparently Passed	Lost from Observation: Passage Problematic
Upper	99	53	25	4	4	13
Middle	80	43	28	..	2	7
Lower *	358	276	26	7	39	10
Bladder and urethra	21	21	none	..	..	..
Location undetermined	31	23	..	6	2	..
Total	589	416	79	17	47	30

* In sixty-three cases stones were in the intramural portion of the ureter.

† This group includes thirty-one cases in which no cystoscopic manipulations were undertaken for the removal of the stones because of their unusually large size.

TABLE 2.—*Leaving Out "Lost from Observation" and "Location Undetermined" Cases*

	Total Cases	Removal by Cystoscopic Manipulations: Number of Cases	Removal by Cystoscopic Manipulations: Per Cent	Operative Removal: Number of Cases	Operative Removal: Per Cent
Upper	78	53	67.9	25	32.1
Middle	71	43	60.5	28	39.5
Lower *	302	276	91.3	26	8.7
Bladder and urethra	21	21	100.0	none	....
Total number cases	472	393	83.2	79	16.8

* In fifty-six cases stones were in the intramural portion of the ureter.

TABLE 3.—*Lower Ureter—Acute and Chronic Cases*

	Total Cases	Removal by Cystoscopic Manipulation: Number of Cases	Removal by Cystoscopic Manipulation: Per Cent	Operative Removal: Number of Cases	Operative Removal: Per Cent
Acute cases (up to 4 mo.) in intramural portion in 37 cases	177	172	96.6	5	3.1
Chronic cases (from 4 mo. to several years) in intramural portion in 18 cases	125	104	83.2	21*	16.8
Total lower ureter	302	276	91.3	26	8.7

* This group includes eight cases in which no cystoscopic manipulations were undertaken for the removal of the stones because of their unusually large size.

INDICATIONS FOR AN OPERATION

The indications for an operation depend on several factors:

Position of the stone. The incidence of operative and nonoperative removal of stones based on their position in the ureter are widely divergent, as may be gleaned from tables 1, 2 and 3.

Size of the stone. Large stones measuring 0.8 cm. and more in width, situated in the upper part of the ureter, should be viewed with much concern. Stones of larger size are amenable to cystoscopic removal when they are situated within the lowest 5 centimeters of the ureter, unless they exceed 1.2 cm. in width, the length not being so important a consideration. Tables 4, 5 and 6 give an idea of the sizes of stones removed by cystoscopic manipulations, by an open operation or those passed by the patient without instrumental aid.

To recapitulate, in 100 cases in the entire series, stones measuring more than 0.6 cm. in width made their departure without the aid of surgical operations.

Infection. Severe renal infection resulting from a ureter plugged with a stone and the failure to pass by the obstruction with a catheter should, as a rule, call for an open operation irrespective of position and size of the stone. Even these cases, if the stone is lodged in the lower end of the ureter, should be given a reasonable test of endurance. Too much temporizing, however, may result in the loss of the kidney.

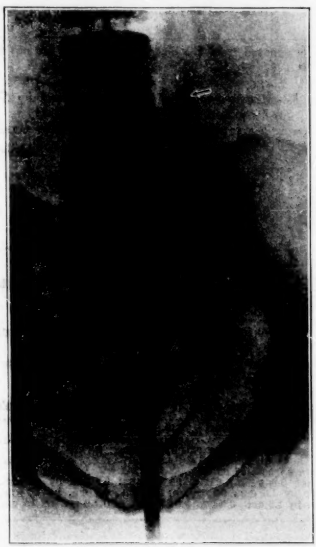

Fig. 6.—Dilation of the middle portion of the ureter, below the stone (arrow) with author's rubber bag.

Congenital stenosis. This condition of the ureteral meatus or intramural portion of the ureter may at times be so advanced as to preclude the possibility of any intra-ureteral manipulation. The stone in these cases is usually secondary to stenosis below and it should be removed by an open operation.

Bilateral calculous obstruction. This condition, or an impacted stone in a patient having a solitary kidney, acquired or congenital, or a stone acutely impacted in a ureter with the kidney on the opposite side the seat of far advanced disease, is extremely serious, usually calling for prompt operative intervention. The amount of urinary output, the elimination of phenolsulphonphthalein and the condition of the blood found on chemical examination should be carefully studied, as they help to determine the gravity of the given case and guide the treatment. In this series there were a number

of cases with bilateral calculous obstruction which were allowed to go on for a number of weeks, as there was evidence of drainage, and the stones were finally made to pass by cystoscopic manipulation.

TABLE 4.—*Measurements of Ureteral Stones Removed by Cystoscopic Manipulations* *

Width		Length			
Cm.	Number of Cases	Cm.	Number of Cases	Cm.	Number of Cases
0.2	24	0.2	2	1.4	9
0.3	37	0.3	22	1.5	4
0.4	60	0.4	27	1.6	1
0.5	70	0.5	33	1.7	1
0.6	58	0.6	47	1.8	1
0.7	34	0.7	55	2.0	2
0.8	23	0.8	34	2.2	1
0.9	8	0.9	26	2.8	1
1.0	1	1.0	21	3.0	1
1.1	2	1.1	17	3.5	1
1.2	2	1.2	9		
1.3	1	1.3	5		22
	Total 320		298		
				Total	320

* Those removed from the bladder and urethra are not included in this group.

TABLE 5.—*Measurements of Stones Removed by Surgical Operation in This Series (Width Only)* *

Cm.	Number of Cases	Cm.	Number of Cases
0.4	1	1.0	20
0.5	4	1.1	9
0.6	6	1.2	5
0.7	7	1.3	1
0.8	6	1.4 and more	3
0.9	12		6

* Total number of cases, 74 (80 stones removed).
Average width, 1.08 cm.; average length, 1.56 cm.
One giant stone, measuring 0.9 cm. by 9.0 cm., was not included in estimating the average.

TABLE 6.—*Spontaneous Passage of Ureteral Stones—Total Number of Forty-Five Cases*

	Number of Cases
Into the bladder from which it was removed by cystoscopic tongueur	14
Average size of the stone, 0.9 cm. by 1.2 cm.	
Into the urethra	7
Average size of stone, 0.9 cm. by 1.4 cm.	
Passed without instrumental aid	24
Less than 0.7 cm., 17 cases.	
More than 0.6 cm., 7 cases, as follows: 0.7 cm. by 0.9 cm., 0.7 cm. by 1.0 cm., 0.7 cm. by 1.3 cm., 0.9 cm. by 1.2 cm., 0.9 cm. by 1.3 cm., 0.9 cm. by 2.0 cm., and 1.2 cm. by 1.2 cm.	

TABLE 7.—*Analysis of Indications for Surgical Operations in This Series*

		Number of Cases
1	Refused cystoscopic manipulations	5
2	Stones too large; no cystoscopic manipulations attempted	31
3	Emergencies: impending uremia (bilateral disease) hemorrhage, severe renal infection with impaction of stone	7
4	Failure of cystoscopic manipulations	28
	(In 12 cases the stones were apparently hopelessly impacted)	
5	Cystoscopic manipulation difficult because of prostatic obstruction	2
6	Ruptured kidney with subcapsular hydronephrosis	1
7	Removal from ureteral stump following nephrectomy	1

It is difficult to set an arbitrary length of time during which a stone may be allowed to remain in the ureter, as each case should be judged according to its own merit. The following rules may, however, be laid down:

No patient should be submitted to a surgical operation, however hopeless the impaction of the stone may appear to be, unless its indication is clearly ascertained by intravenous pyelography.

A fairly large stone situated in the upper or middle part of the ureter should be removed by an open operation following two or three fruitless attempts to pass by the obstruction, even in the absence of infection or the apparent drainage through a groove.

In the face of improved function and abatement of infection, when an obstruction has been passed, the stone being in the upper two thirds of the ureter, longer waiting is preferred, even if the stone has not moved.

The downward movement of the stone, as determined by roentgenography, shows that encapsulation of the calculus has not taken place, and one may reasonably expect the stone to come down.

It is when the stone is situated in the lower end of the ureter that the advisability of prolonged waiting should be emphasized even though it may appear to be hopelessly impacted. Intravenous pyelography is of great aid in such cases.

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ABSTRACT OF DISCUSSION

DR. LEON HERMAN, Philadelphia: It is interesting to note the marked differences in the ratio of operative cases in various reported series of ureteral calculi. The explanation is perhaps that the time and care required for nonoperative treatment lead some surgeons to advise operation in cases that could well be handled otherwise. In Dr. Dourmashkin's series, a larger number of patients were operated on for calculous impaction in the upper ureter than in the pelvic segment of the tube. This does not imply that permanent impaction of calculi occurs more often in the proximal segment of the ureter but that the author, in common with other urologists, operates for the removal of stone situated high in the ureter which would probably traverse its abdominal segment but become impacted permanently at the distal end. It is a difficult matter to determine by the size and formation of a stone situated in the upper ureter the advisability of instrumental treatment as opposed to immediate operation. In those cases in which the spontaneous passage of the stone is doubtful, operation should be performed while it occupies a high position in the ureter. All urologists are familiar with the difficulty of a decision for or against operation in cases of this kind. The data obtained by the study of urograms prepared by both the intravenous and the retrograde methods is of great assistance in arriving at a decision. Thus, greater conservatism is justifiable in the case of a rather large rough stone contained in a capacious ureter, especially if the stone moves downward for a distance after instrumental manipulations. One must not lose sight of the fact that instrumentation of the ureter is not without danger. This is especially true in the presence of infection. Ureterography should rarely be performed by the retrograde method in cases of impacted ureteral calculi offering obstructions impassable to the catheter. Dr. Dourmashkin has called attention to the important fact that marked renal dysfunctioning quickly follows the descent of the stone into the ureter, the kidney showing loss of functioning out of all proportion to the obstructive uropathy. Intravenous urography is of the greatest value in such cases.

DR. ABRAHAM RAVICH, Brooklyn: Such results are a triumph for conservative urologic methods as against radical surgical procedures; they emphasize the importance of urologic contributions to medicine. In a preliminary study of 650 cases of ureteral stones gleaned from my private files, I find that 7 per cent of the patients had passed their calculi spontaneously, without aid; 8 per cent had to be operated on, whereas about 85 per cent required more or less cystoscopic manipulation for the passage of the stones. The only important difference between Dr. Dourmashkin's method and mine is that he resorted to slitting of the ureteral orifice in approximately 20 per cent of the patients treated cystoscopically, whereas in my series I found this procedure necessary in only 3 per cent of the cases. These results differ somewhat from my hospital cases, which I have not as yet compiled but which probably number from 250 to 300. In these, the economic factor both to the hospital and to the patient is so great that, it seems to me, a larger percentage

of patients were treated operatively rather than by the more conservative cystoscopic methods, especially when the larger stones were involved. An arbitrary rule cannot be applied as to the size of the stone that can be made to pass by conservative means, for some relatively small stones have to be operated on and, on the other hand, a stone 2.4 by 1.0 by 0.7 cm., which I had never considered possible to remove without operation, passed following the first cystoscopy. The one important factor which I believe is responsible for a large number of these calculi is urinary stasis, and correction of this as far as possible has in my hands resulted in a surprisingly low rate of recurrence, a little over 2 per cent.

DR. A. H. PEACOCK, Seattle: My experience with removal of calculi from the ureter has taught me one or two things, namely, the dilatability of the ureter, which varies a great deal in different patients, and that the shape of the stone rather than the size is a factor in its journey. Often a small, irregular stone will become securely impacted and cannot be dislodged by any ureteral manipulation, and continued manipulation will only result in infection, with permanent damage of the kidney. There is no rule that I have ever found whereby one can be governed as to how to treat these patients. There is as much art in how one handles the dilatation as in anything else urologists do. I believe there is only one remedy in most of these cases, and that is removal by surgical means.

DR. T. C. STELLWAGEN, Philadelphia: I feel in regard to this question that one point has been lost sight of, and that is the necessity of relieving the patient not only of the stone but of the stasis. The point which I think should be stressed in all of these cases is to correct the deformity of the ureter or the pelvis of the kidney, or the position of the kidney, which certainly has an important rôle to play in the production of the stone. I think that all have been guilty of this error. The desire to remove the stone leads to its removal and possibly some deformity is left behind and that, to my mind, will result in reformation of stone very shortly. Another important thing is the question of infection. Most patients have a definite infection that may be present today and may not be present again for a week or ten days. I think these infections should be treated preliminary to operation, and I think great care should be taken that the infection is taken cognizance of after operation. The deformity of the ureter or the pelvis of the kidney, or its fixations from adhesions and so on, should always be corrected and the infection should be cleared up.

DR. IRVING LERMAN, Elizabeth, N. J.: A point of extreme interest is that about conservatism in the treatment of ureteral stones. I talked with Dr. Dourmashkin about a year ago concerning a young woman with a stone about 2 cm. long impacted in the ureter, which was completely blocked. She gave a history of pain in the left side for two years. I observed her for about four months while making up my mind about operation. I examined her eight or ten times with the cystoscope. At no time was any dye seen to come out, and no bougie of any sort could be passed. There was complete obstruction of the ureter. At operation I removed the stone but I had no consent to remove the kidney, which I considered at that time. To my surprise, at the end of three months urine started coming through and the percentage was almost equal from the two ureters. I agree with Dr. Dourmashkin that the kidney can lie down on the job for some time and then resume functioning.

DR. RALPH L. DOURMASHKIN, New York: I wish to emphasize the importance of correct interpretation of absent ureteropelvic shadows on the affected side following the administration of iopax. It may mean only a temporary cessation of the kidney's power to excrete solids even for a considerable length of time and it should not be regarded as an indication for surgical intervention. The rapid restoration of renal functioning was demonstrated with the aid of phenolsulphonphthalein in a number of cases of absent shadows in which it was possible to pass by the obstruction and in which a catheter was left indwelling. In reply to Dr. Stellwagen as to correction of other lesions in the ureter following the removal of the stone, I wish to call attention to the fact that of the twenty-four recurrences noted in this series but two were on the same side. If ureteral stricture was meant, this would probably eliminate its rôle as the etiologic factor in the production of the stone.

FAT TOLERANCE IN EXPERIMENTAL HYPERTHYROIDISM *

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AND
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Hyperthyroidism is characterized by an increased total heat production by the animal organism. The exact source of the energy that goes into the production of this excess heat is obscure. Carbohydrates are in normal individuals an important source of heat production. In hyperthyroidism the glycogen content of the liver is greatly depleted if not completely exhausted, as shown by Schryver [1] and by Cramer and Krause,[2] and yet in this condition many investigators have observed a reduced sugar tolerance. Sanger and Hun [3] believed that this indicated an inability of hyperthyroid patients to store glycogen in the liver. Du Bois,[4] however, reports an experiment on a hyperthyroid patient which indicated that storage of carbohydrate in the liver did occur. Boothby and Sandiford [5] as a result of extensive experiments, concluded that "there is no measurable increase in the endogenous protein metabolism in exophthalmic goiter; therefore it cannot be the cause of the increased basal metabolism in this disease."

Although fats are recognized as a very important source of energy in normal individuals, little attention appears to have been paid to this source in hyperthyroidism. We have been unable to find in the literature any observations on the effect of hyperthyroidism on fat tolerance. No one seems to have reported an increase of fat in the blood in exophthalmic goiter. Raab [6] stated that parenteral administration of thyreoiodine in no way influenced the fat content of the blood. Bing and Heckscher [7] noted a reduction in alimentary lipemia in exophthalmic goiter. Burn and Ling [8] observed a reduction in the ketonuria induced in mice by the feeding of olive oil if thyroxine was administered. Clevers [9] found an increase in cholesterol of the blood in hyperthyroidism. Leupold [10] stated that small doses of thyreo-iodine decreased the cholesterol content of the blood in rabbits, while large doses increased it. Macciotti [11] also records the reduction of blood cholesterol under the influence of thyreo-iodine. Increase in blood cholesterol has been reported after thyroidectomy by Rohrschneider,[12] and in myxedema by Luden.[13]

Our experiments were carried out to determine the effect of hyperthyroidism on the fat and lipoid content of the blood after the administration of 2 cc. of olive oil for each pound of body weight. Fifteen dogs have been used. Some have died either from intercurrent

* Aided by a grant from the Fenger Memorial Fund.
* From the Department of Pathology, Northwestern University Medical School.
* Read before the Section on Pathology and Physiology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

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3. Sanger, B. J., and Hun, E. G.: Glucose Mobilization Rate in Hyperthyroidism, Arch. Int. Med. **30**: 397 (Sept.) 1922.
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infection or from acute thyrotoxicosis; others are still being made the subjects of investigation. At present we have complete records of seven animals. The technic used by us was, briefly, as follows: After the animals had been starved for four days, a sample of blood was taken from a vein. The animal was then given 2 cc. of olive oil for each pound of body weight. At intervals of one, three, five and seven hours thereafter, other samples of blood were withdrawn. The total fat and cholesterol content of the plasma in each of the five samples was determined by the method described by Bloor.[14] From two to three determinations were made in this way before feeding of 10 Gm. of desiccated thyroid was begun. Within a week these animals began to show symptoms of thyrotoxicosis: loss of weight, great excitability and diarrhea. During the period of hyperthyroidism, determinations of total lipid and cholesterol content of the blood were made at intervals of from one to three weeks, following the technic already described. The preliminary starvation seemed to stop the diarrhea, as the animals did not manifest this symptom during the course of the test. After varying periods, thyroid feeding was stopped, the animals were allowed to recover, and a similar series of tests was again carried out.

Our results may be briefly summarized as follows:

1. These animals showed rather marked individual differences in the fat content of their blood at the beginning of the experiment and in the degree of lipemia produced by feeding the amount of olive oil used. This was also observed by Rony and Ching.[15] The cholesterol content of the blood bore no definite relation to the neutral fat present.

2. In general, the initial blood fat, i. e., in the sample taken just prior to feeding the oil, was lower during the period of hyperthyroidism than before thyroid feeding was begun, and the administration of 2 cc. of olive oil for each pound of body weight induced a less marked rise in the total lipid content of the blood. Rony and Ching [15] found that prolonged fasting caused a marked lowering of the initial blood fat and that "fasting augments and previous abundant feeding decreases alimentary lipemia." Their animals were starved for from one to three weeks. The initial lowering of total blood lipids in our experiments may have been due to the fact that our animals were starved for four days during the period of hyperthyroidism just as they were before thyroid feeding was begun. It may be, therefore, that four days' fasting in a state of hyperthyroidism is the equivalent of a longer fast under normal conditions. However, in Rony and Ching's experiments fasting augmented the alimentary lipemia; in our experiments lipemia was usually reduced in hyperthyroidism. There is therefore some difference between the effect of fasting on alimentary lipemia in a normal and in a thyrotoxic animal. No very noteworthy change was observed in the cholesterol content of the blood in hyperthyroidism as compared with the preceding normal condition.

3. After these animals were allowed to recover from hyperthyroidism, their fat tolerance returned to approximately its normal level. During this period of recovery, however, a very noteworthy increase in blood cholesteral was observed. During the period of hyperthyroidism the thyroid gland underwent marked atrophy, sometimes weighing less than 1 Gm. After recovery from experimental hyperthyroidism these animals may have passed into a state of hypothyroidism because of this atrophy of the thyroid. This explanation is in harmony with the observations of Rohrschneider [12] and of Luden,[13] previously mentioned. A further related phenomenon may be the observed hypertrophy of the suprarenals during the stage of hyperthyroidism. Goldzieher [16] and Schmitz and Milbradt [17] have suggested that the suprarenals have something to do with the regulation of blood lipoids.

4. The total lipids of the blood as determined by chemical means do not always correspond with the gross lipemia determined by the degree of opalescence or turbidity of the plasma; i. e., a plasma that shows only a moderate gross lipemia may contain as much fat and cholesterol as another sample that is quite turbid.

14. Bloor, W. R.: J. Biol. Chem. **77**: 53 (April) 1928.
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SUMMARY

1. The total lipid content of the blood plasma is lowered in experimental hyperthyroidism.

2. Feeding 2 cc. of olive oil for each pound of body weight induced a less marked alimentary lipemia in thyrotoxic than in normal animals.

3. Recovery from experimental hyperthyroidism is accompanied by hypercholesterolemia.

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HYPERGLYCEMIA IN PERSONS WITH ADVANCED SENILE CATARACT *

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The etiology of senile cataract remains obscure despite the efforts that have been made to establish a cause or causes. Up to the present no certain knowledge has been obtained of the common causes of this condition. As a matter of fact there is probably no one cause but a multiplicity of them. Theories there are in abundance, but too frequently they have been advanced on an inadequate basis. If the etiology of senile opacity of the lens is to be discovered, the problem must be approached in a scientific manner. Little by little, work must be done and the results rejected or fitted to other results, until finally these observations may be pieced together and the true explanation for this condition established.

In a review of the literature one is astounded to find the great number of theories that have been advanced. Some of these are reasonable and others scarcely fit into the scheme at all. The theorists may be divided into three groups: (*a*) those who believe cataract is an attribute of age; e. g., Salus, Greef and Vogt; (*b*) those who believe that the opacities result from local ocular changes; e. g., Otto Becker, Schön, Deutschmann, Magnus, Elschnig, Peters, van der Hoeve and Löwenstein; and, finally, (*c*) those who believe cataract to be the result of a general metabolic disturbance; e. g., Hess, Römer, Grilli, Boucarut, Kuwabara, Burdon-Cooper, Scalinci, Possek, A. Leber, von Hess, Schiötz, Birch-Hirschfeld, Fischer and Triebenstein.

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* From the Department of Ophthalmology, State University of Iowa College of Medicine.

* Read before the Section on Ophthalmology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

Ophthalmologists are familiar with the fact that there is an hereditary tendency toward cataract in some families. It is well known that lens opacities occur as a complication of various local ocular diseases. Cataract also appears in association with certain general diseases, notably diabetes, tetany and myotonia atrophicans. But the cause of typical senile lens changes is still unknown. It is difficult to believe that these lens changes are simply a retrogressive metamorphosis associated with age, for if this were true all elderly persons should show lenticular opacities, and such is not the case. Undoubtedly many ophthalmologists will agree that often there are local ocular changes; but what is back of the local condition? If the changes are entirely local, why is cataract always bilateral? Probably general disturbances of metabolism are most frequently the origin of senile lens changes. These metabolic disturbances are probably mild but act over a long period of time, since the average cataract progresses slowly but progressively over a period of years, until the fibers of the entire cortex become opaque.

The lens makes some demand on nutrition, for under normal conditions transparency is maintained and provision made for the growth of new lens fibers throughout life. Indirectly, by means of the aqueous and vitreous, lens metabolism is carried on through the blood. If changes in the blood are present, the tissues and fluid media surrounding the lens are probably altered, and this affects metabolism. The chemical composition of the blood may become altered under various conditions, and such alterations may be expected to change the physical state of the lens. Such a condition is the hyperglycemia of diabetes and allied diseases.

With the knowledge that lens changes are extremely frequent in elderly persons long affected with diabetes and that cataract sometimes occurs as a complication of diabetes in children, it was thought that perhaps a study of the blood sugar and dextrose metabolism, in those having senile cataract, might throw some light on the problem of lens opacities in the aged.

As far back as 1860 S. Weir Mitchell [1] found that cataracts developed rapidly in frogs following the injection of large amounts of sugar into the animal. He states that "it is possible that the long continued presence of even a small amount of sugar in the blood may cause in the crystalline lens osmotic changes productive of opacity." In de Schweinitz's [2] discussion of the causes of cataract, it is stated that Schanz found that the presence of sugar and acetone aided the action of light in causing cataract.

Baldwin and Barthel,[3] in 1924, reported a study of 132 consecutive cases of cataract. They found that 99 of the 132 patients had a blood sugar of over 120 mg. per hundred cubic centimeters. H. Maxwell Langdon,[4] in 1925, published a report on chemical studies of the blood in senile cataract patients. In the 100 cases included in his series, 15 showed a high blood sugar and 45 a lowered dextrose tolerance.

In the literature there are several reports that tend to support the belief that deranged sugar metabolism may be one of the causes of cataract. One reads that reduction of the blood sugar to normal led to the cessation of progress in some cataracts and occasionally to disappearance of those lens changes already present. In 1928 I [5] published a report on studies of dextrose metabolism in patients with senile cataract. In this series of seventy-four consecutive cases the fasting blood sugar level was above 120 mg. per hundred cubic centimeters in 82 per cent, and there was a lowered tolerance for dextrose in 54 per cent of the cases. The present study is a continuation of the aforementioned effort to determine the possible connection between altered sugar metabolism and cataract.

The present study was made on patients with senile cataract as they were admitted to the wards of the University Hospital for lens extraction.

FASTING BLOOD SUGAR LEVEL

In a review of the available literature it is noteworthy that investigators disagree to some extent as to the normal fasting blood sugar values. These values vary slightly according to the source of the blood, the method of sugar determination and other controllable factors, which are discussed later. Foster [6] reported the normal fasting blood sugar, when using capillary blood and the Folin-Wu technic, as from 93 to 150 mg. per hundred cubic centimeters. Hale-White and Payne,[7] in similar experiments, found the range to be from 60 to 120 mg. E. J. Magers,[8] working with the Boyd micromodification of the Folin-Wu technic in the same laboratory in which the present series of cases was examined, found the fasting range to be between 74 and 120 mg. The foregoing method of determination has been used in the laboratory of pathologic chemistry at the University of Iowa for the past eight years and values above 120 mg. were scarcely ever found in normal fasting subjects. Suffice it to say that practically never is the maximum concentration of blood sugar in a normal fasting person above 120 mg. per hundred cubic centimeters. Cases presenting a sugar concentration above this level are to be considered abnormal.

Blood.—All the determinations in this series of cases were made on capillary blood. It is a fairly well established fact that the sugar values for capillary blood are slightly higher than those for venous blood. However, Foster [6] compared the capillary and venous blood values and found them almost identical in fasting normal subjects. Hagedorn, quoted by Hale-White and Payne,[7] found in the capillary blood a greater concentration of sugar. Dr. Gibson, director of our pathologic chemistry laboratories, stated that in fasting normal persons the capillary blood sugar is higher. In the present series of cases there were sixty-eight instances in which capillary and venous blood sugar were both determined; in 58 per cent the former showed the greater sugar concentration.

Method of Analysis.—In all determinations the Boyd [9] micromodification of the Folin-Wu method was employed. It has been stated previously that determinations by this method on normal capillary blood show a maximum concentration of 120 mg. per hundred cubic centimeters.

There are several methods for the determination of blood sugar, some giving slightly higher results than others. This may be due to the fact that by some

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methods not only dextrose is reduced but other substances as well. These methods need not be considered here, although it might be well to point out that, by any of the methods, 120 mg. is usually regarded as a high normal. However, Gray [10] reported 160 mg. per hundred cubic centimeters as the maximum in normal fasting subjects, using various methods of analysis, and John [11] reported 140 mg. as the maximum when using a modification of Benedict's method.

TABLE 1.—*Ages of Patients with Senile Cataract*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99	Total
Number of cases	3	6	47	74	82	25	1	238

Age.—In this series of cases there was a preponderance of aged persons. The age limits were 38 and 91 years. Over 95 per cent of the patients were between the ages of 50 and 88, with an average age of 66 years. The number of cases according to decades is shown in table 1.

Blood sugar values increase slightly with age, according to Punschel,[12] John [13] and others. Hale-White and Payne [7] state that the fasting sugar level is practically the same in the young and the old. In elderly patients, such as are presented here, one might expect high normal fasting values but not above 120 mg. As a matter of fact, the percentage of cases showing high fasting levels did not increase in proportion to the advance in age, as may be seen from table 2.

Duration of Fast.—Blood from the patients in this series was drawn after an overnight fast of approximately fourteen hours' duration. Hale-White and Payne [7] state that the blood sugar is at normal concentration four hours following a light meal.

Previous Diet.—Excepting the diabetic patients whose condition had been diagnosed clinically, all patients included in this study were on an average hospital diet.

Exercise.—Previous muscular activity may increase the fasting blood sugar according to Hale-White and Payne.[7] This factor need not be considered in this study, since all patients were hospital cases and were in a comparative state of rest, both before and during the collection of blood.

TABLE 2.—*Fasting Blood Sugar Values*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99	Totals
Number of cases	3	6	47	74	82	25	1	238
Number of cases with sugar at or below 120 mg.	2	3	26	39	51	17	1	139
Number of cases with sugar above 120 mg.....	1	3	21	35	31	8	0	99
Percentage of cases with fasting blood sugar above normal	33	50	45—	47+	38—	32	0	41.6

Pain.—There has been some discussion as to the effect of pain in increasing the concentration of blood sugar. Some investigators believe that the process of withdrawing the blood is sufficiently painful to increase slightly the sugar level. It is difficult to understand how the pain of a finger prick might increase the level of blood sugar.

Other Diseases Affecting the Level of Blood Sugar.—It has been known for years that diseases other than diabetes are sometimes accompanied by hyperglycemia. Among these may be mentioned arteriosclerosis, advanced nephritis, hyperthyroidism, arthritis deformans, pancreatic disease, certain disturbances of the endocrine glands, and acute infections. Hagelberg, according to Baldwin and Bartel, states that hyperglycemia is frequent in hypertension. Mosenthal [14] believes that there is a hyperglycemia in hypertension and nephritis but that it is not a true diabetic condition. That certain of the patients in the series herewith presented had arteriosclerosis, hypertension and nephritis almost goes without saying, since these conditions are frequent in the aged. Blood pressures were estimated in 161 cases and studies of the urea nitrogen and uric acid content of the blood were carried out on 223 and 211 cases, respectively. The systolic blood pressure was above 150 mm. mercury in fifty cases (30 per cent), and of these fifty cases the pressure was between 150 and 175 in twenty-seven (16 per cent), between 175 and 200 in twenty (12 per cent), and above 200 in only three instances (2 per cent).

TABLE 3.—*Blood Urea Nitrogen*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99	Totals
Number of cases	3	6	42	71	78	22	1	223
Under 16 mg.....	1	3	22	37	44	8	1	116
Between 16 and 20 mg...	2	3	15	19	23	10	0	72
Above 20 mg.	0	0	5	15	11	4	0	35

TABLE 4.—*Blood Uric Acid*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99	Totals
Number of cases	2	6	40	67	75	20	1	211
Below 4 mg..	1	2	15	21	24	8	1	72
Above 4 mg.	1	4	25	46	51	12	0	139

An idea of the state of the kidneys may be had from tables 3 and 4.

Thus it is seen that less than one third of the patients had hypertension. Furthermore, if one is to believe the results of the blood studies, there were comparatively few with even moderate kidney changes. Be that as it may, the fasting blood sugar was abnormally high in a large number of the cases in this series and whether it was the result of changes in the sugar-burning mechanism, changes in the vascular system, endocrine disturbances or other changes does not preclude the possibility of an effect on the crystalline lens.

All the patients had a physical examination prior to the extraction of the lens. Aside from the diabetic and the aforementioned patients with hypertension and kidney disorder, there were few with a discoverable general disease. Only one case of toxic goiter was found, two cases of arthritis deformans, one case of acromegaly, one case of carcinoma and a few cases of syphilis.

10. Gray, Horace: Blood Sugar Standards, Arch. Int. Med. **31**: 241 (Feb.) 1923.
11. John, H. J.: Glucose Tolerance and Its Value in Diagnosis, J. Metab. Research **1**: 497 (April) 1922.
12. Punschel, A.: Der Blutzucker im höheren Lebensalter unter besonderer Berücksichtigung der alimentären Hyperglykämie, Ztschr. f. klin. Med. **96**: 253 (Jan.) 1923.
13. John, H. J.: Study of Fasting Blood Sugar and Urea in Non-diabetic Patients, Ann. Clin. Med. **5**: 340 (Oct.) 1926.
14. Mosenthal, H. O.: Metabolism in Nephritis, in Endocrinology and Metabolism, edited by Lewellys F. Barker **4**: 343.

The fasting level of the blood sugar was determined in 238 consecutive cases of senile cataract by the use of capillary blood and the Boyd micromodification of the Folin-Wu method. In this series of 238 cases there were 99 (41.6 per cent) with a blood sugar above 120 mg. per hundred cubic centimeters. In table 5 the exact data are presented.

TABLE 5.—*Fasting Blood Sugar Values*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99	Totals
Number of cases	3	6	47	74	82	25	1	238
Blood sugar at or below 120 mg.....	2	3	26	39	51	17	1	139
Number of cases above 120 mg.....	1	3	21	35	31	8	0	99
Percentage with sugar above normal	33	50	45—	47+	38—	32	0	...
Average blood sugar in those at and below 120 mg.	105	91	103—	101+	103	106	100	...
Average blood sugar in those above 120 mg.	122	202+	217—	182+	139—	132+	...	...
General average of fasting blood sugars in mg.	111—	147—	154—	138+	116+	114+	100	130

From this study it appears that many patients with senile cataract have an abnormally high fasting blood sugar. Many have clinical diabetes with established symptoms, some of the remainder have mild diabetes and others appear to be prediabetic. While the presence of a prolonged high concentration of sugar in the blood, and probably in the fluids which nourish the lens, may not be the cause of senile cataract, it would seem justifiable to believe that in many cases it plays a rôle in etiology.

ALIMENTARY HYPERGLYCEMIA

It was thought that disturbances in carbohydrate metabolism might be determined more easily by the use of the dextrose tolerance test. Perhaps in those who are unable to utilize dextrose properly there exists a more or less prolonged hyperglycemia, following the ingestion of carbohydrate foods, and the lens is bathed repeatedly over long periods of time with fluids high in sugar content. Shanz found that the lens became cataractous much more rapidly when bathed in a solution that contained dextrose. Following the ingestion of a dextrose meal there is a transient hyperglycemia. The concentration of the blood sugar and the time of the hyperglycemia depend on the ability of the individual to utilize sugar. Normal dextrose tolerance curves have been established and deviations from the normal indicate inability to utilize carbohydrates. In the use of this test, certain controllable factors exist:

Amount of Dextrose Ingested.—Formerly the fasting patient was fed a large quantity of dextrose, 100 Gm. or more, but such a large amount is unnecessary since a large proportion remains in the stomach.[15] Such large doses also produce nausea and this has an elevating effect on the glycemia curve.[11] MacLean and de Wesselow [16] found that a dose of over 25 Gm. of dextrose did not change the maximum concentration of the blood sugar but did prolong the reaction. To strike a happy medium, 50 Gm. was employed in the laboratory in which these tests were carried out.

Blood.—Capillary blood was used, as in the determination of the fasting sugar level. This gives a slightly higher concentration and a more prolonged reaction than venous blood.

Method of Sugar Determination.—The Boyd micromodification of the Folin-Wu method was employed. There is little difference in the values obtained by various methods when sugar concentration is high.

Previous Fasting Time.—The period of fasting has a slight influence on the curve, as does the type of food ingested, even if taken as long as eighteen hours previous to the test. My patients had the dextrose meal following a fourteen hour fast. They were on a general hospital diet previous to the fast. Since normal curves were established by Magers [8] in the same laboratory, comparison with these indicated those of my cases which were normal and those which were abnormal.

Exercise.—A higher fasting blood sugar level and a lower curve may be the result of exercise during sugar tolerance tests, but since my patients were at rest these factors need not be considered.

Pain.—This factor also need not be considered. The slight pain of several finger pricks probably had no effect on the concentration of sugar.

Nausea.—Nausea was not produced by a dose of 50 Gm. of dextrose and had no effect in the present series of cases.

Age.—Most authors agree that, in aged subjects, the sugar curve is higher and more prolonged; i. e., the tolerance is lowered. Hale-White and Payne [7] suggest that in normal subjects between the ages of 50 and 70 the blood sugar should not rise above 220 mg. per hundred cubic centimeters and in those between the ages of 70 to 80 it should not go above 240 mg.

In the analysis of a sugar tolerance curve, three factors are to be borne in mind: (*a*) the fasting blood sugar level, (*b*) the height and time of maximum hyperglycemia, and (*c*) the time required for the blood sugar to return to normal.

As has been previously stated, most investigators consider a fasting blood sugar concentration over 120 mg. as abnormal. In this series of 238 cases of senile cataract the tolerance test was not run on twelve

TABLE 6.—*Maximum Hyperglycemia*

Author	Mg. per 100 Cc.
Jacobsen, A. T. B.: Bioch. Ztschr. **56**: 471, 1913.....	220
Hamman, Louis; and Hirschman, I. I.: Arch. Int. Med. **20**: 761 (Nov.) 1917.....	150
Foster, G. L.: J. Biol. Chem. **55**: 291 (Feb.) 1923.....	200
Spence, J. C.: Quart. J. Med. **14**: 314 (July) 1920-1921....	219
Hale-White, R., and Payne, W. W.: Quart. J. Med. **19**: 393 (April) 1926; **20**: 456 (July) 1927.....	200 *
Hopkins, A. H.: Am. J. M. Sc. **149**: 254, 1915.....	157
Cummings, Roland; and Pineas, George: Arch. Int. Med. **19**: 777 (May) 1917.....	204
Denis, W.; Aub, J. C., and Minot, A. S.: Arch. Int. Med. **20**: 964 (Dec.) 1917.....	140
Janney, N. W., and Isaacson, V. I.: J. A. M. A. **70**: 1131 (April 20) 1918.....	162
Strouse, Solomon: Arch. Int. Med. **26**: 751 (Dec.) 1920....	120
MacLean, H., and de Wesselow, O. L. V.: Quart. J. Med. **14**: 103 (Jan.) 1921.....	170
Goto, Kingo; and Kuno, Nobuzo: Arch. Int. Med. **27**: 224 (Feb.) 1921.....	180
John, H. J.: J. Metab. Research **1**: 497 (April) 1922.....	230
Olmstead, W. H., and Gay, L. P.: Arch. Int. Med. **29**: 384 (March) 1923.....	190
Rabinowitch, I. M.: J. Clin. Investigation **2**: 579 (Aug.) 1926.....	180
Magers, E. J.: J. Iowa M. Soc. **20**: 113 (March) 1930....	190 †

* Even 240 in senility.
† Carried out in Dr. Gibson's laboratory.

15. Beeler, C.; Bryan, A. W., Cathcart, E. P., and Fitz, R.: An Improved Alimentary Glucose Tolerance Test, J. Metab. Research **1**: 549 (April) 1922.
16. MacLean, H., and de Wesselow, O. L. V.: The Estimation of Sugar Tolerance, Quart. J. Med. **14**: 103 (Jan.) 1921.

advanced clinical cases of diabetes and a few other cases were inadvertently omitted. Tolerance curves were run on 214 cases, 87 of which presented a fasting blood sugar level of over 120 mg. That is to say, 40 per cent of the cases showed an abnormally high concentration of sugar in the blood before the dextrose meal.

TABLE 7.—*Maximum Concentration of Blood Sugar After Ingestion of a Fifty Gram Dextrose Meal*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99	Totals
Number of Cases	3	5	43	64	76	22	1	214
Cases showing maximum sugar concentration over 200 mg.	0	0	25	45	46	13	0	129
Cases showing maximum sugar concentration over 220 mg.	0	0	15	36	37	11	0	99
Cases showing maximum sugar concentration over 240 mg.	0	0	16	20	19	10	0	65
Cases showing sugar concentration less than 200 mg.	3	5	17	20	30	9	1	85

There was an inability to utilize carbohydrates properly in these patients.

The greatest concentration that the blood sugar may reach in normal subjects after the ingestion of a dextrose meal is a moot point, but practically all authors agree that it should not go beyond 220 mg. per hundred cubic centimeters. Table 6 shows the maximum hyperglycemia according to different authors.

Magers, working with the same technic in the laboratory in which my own tests were carried out, ran twenty curves on twelve normal subjects and found 190 mg. per hundred cubic centimeters as the maximum concentration.

In my series of cases the tolerance test was not carried out on twelve advanced diabetic patients, but of the 214 cases in which it was carried out there were 129 showing a sugar concentration over 200 mg. There were ninety-nine cases that showed a sugar concentration greater than 220 mg. If the highest values reported are accepted, i. e., those of Hale-White and Payne,[7] there were sixty-five cases showing a concentration over 240 mg. These observations are summarized in table 7.

TABLE 8.—*Height of Maximum Hyperglycemia*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99
Number of cases showing time of peak one-half hour	2	3	8	15	17	4	0
One hour	0	1	27	43	40	12	0
One and one-half hours	1	0	7	5	16	4	1
Two hours	0	1	1	1	3	2	0

There is also a slight difference of opinion as to the time at which the blood sugar should reach its greatest concentration in normal subjects. Almost all authors believe that the greatest concentration is reached in from thirty to sixty minutes after the ingestion of the dextrose meal. In deranged carbohydrate metabolism the time of reaching the peak is delayed. In this series of 214 cases there were 166 in which the peak was reached after one or more hours. The peak was reached at or after one and one-half hours in forty cases. Thus it is apparent that in many cases there was a delayed peak, such as is found in typical diabetic curves.

A difference of opinion exists as to when the blood sugar should return to its fasting level following the ingestion of a dextrose meal. According to some investigators, the return to normal, in healthy subjects, occurs in one and one-half hours or even earlier. Others place the time limit for normal persons at three hours. In only forty-one cases in this study did the blood sugar fail to return to normal within three hours. On the other hand, even a few known diabetic patients had a return to normal within that period. Perhaps two and one-half hours is the proper limit of normal; in my series ninety-six cases failed to return to normal within two and one-half hours.

COMMENT AND SUMMARY

In this study an attempt was made to determine the relationship, if any, between hyperglycemia and senile cataract. Knowing that changes in the lens occur as a complication of diabetes and other metabolic diseases, it was thought that hyperglycemia, if it existed in those affected with senile cataract, might have some part in causing these changes. If there existed even a moderate increase in the sugar concentration of the blood and of the fluids bathing the lens, and this acted over a period of years, possibly there was a deleterious action on the cortical fibers of the lens. It really would not matter whether the patient had clinical diabetes or not; so long as there existed a hyperglycemia, such an action could take place.

TABLE 9.—*Time of Return to Normal*

Age	30–39	40–49	50–59	60–69	70–79	80–89	90–99
Number of cases showing time of return to normal one and one-half hours	1	1	2	3	2	0	0
Two hours	0	1	8	12	11	2	0
Two and one-half hours	2	1	15	20	22	14	0
Three hours	0	1	8	14	24	1	1
More than three hours	0	1	10	15	16	5	0

The study was made on a series of 238 patients with senile cataract as they were admitted to the wards of the hospital for extraction of the lens. The age of these subjects was from 38 to 91 years, 95 per cent of them being between the ages of 50 and 88. The average age was 66 years (table 1).

Determinations of the fasting, capillary blood sugar were made by the Boyd micromodification of the Folin-Wu method on 238 patients. In ninety-nine cases (41.6 per cent) the fasting blood sugar was above the recognized maximum normal limit of 120 mg. per hundred cubic centimeters (tables 2 and 5).

It is interesting to note that in this series there were only twelve patients with advanced diabetes, i. e., patients who had already had a clinical diagnosis of diabetes.

Hyperglycemia is occasionally associated with arteriosclerosis, advanced kidney lesions and other diseases, and this may have accounted in part for the high percentage of cases showing abnormally high sugar concentration. But from a study of the records of the systolic blood pressure it may be seen that there were

few with hypertension. Also the cases presenting advanced nephritis were not numerous (tables 2 and 4).

The dextrose tolerance test was also utilized as a method for determining the ability of these patients with cataract to utilize carbohydrates. Curves have been established for normal fasting subjects. If the maximum concentration of blood sugar is above 200 to 220 mg., or the peak is not reached within thirty to sixty minutes following the ingestion of a 50 Gm. dextrose meal, or the blood sugar does not return to normal within two and one-half hours, the curve is considered abnormal by most investigators. Prolonged over a period of years, this may have had an effect on the lens. In this series of 214 senile cataract cases the maximum hyperglycemia was above 200 mg. in 129 curves, above 220 mg. in 99, and above 240 mg. in 65 (table 7). The peak was reached in sixty minutes or more in 166 of the 214 cases; it was reached in ninety minutes or more in 40 cases (table 8). The blood sugar had not returned to normal within two and one-half hours in 96 of the 214 cases, and in 41 cases it had not returned to normal within three or more hours (table 9). Thus it may be seen that the normal sugar level was disturbed in approximately half of the cases. In those of my patients with a low intolerance, there occurred repeatedly a hyperglycemia, and the lens was subjected to higher concentrations of sugar in the surrounding fluids.

CONCLUSIONS

From this study it may be stated that a hyperglycemia existed in approximately half of the cases in a series of 218 patients with advanced senile cataract. It appears that abnormally high concentrations of sugar in the blood and body fluids may have a bearing in many cases on the etiology of cataract.

University Hospital.

ABSTRACT OF DISCUSSION

DR. DANIEL B. KIRBY, New York: The method of building up and maintaining the general health and nutrition of the patient is at the present time undoubtedly the best way of dealing with cases of incipient cataract. Consequently it is of real importance to find anything in the nature of dietary error or of functional or nutritional disorder that can be remedied in these patients. The discovery and correction of diminished carbohydrate tolerance in persons with cataract will definitely affect the prognosis. I have been making a number of tests to determine the relationship between the aqueous sugar and the blood sugar both in cases of known diabetes with incipient lens opacities and in cases of cataract without symptoms of diabetes. Precautions must be observed as to diet and fasting before taking the aqueous and blood as there is apparently a lag in the concentration of the aqueous sugar as compared with the blood sugar. Increases or decreases in the blood sugar are not immediately reflected in the aqueous sugar. Undoubtedly because of the slowness of diffusion into the lens itself the time lag is still greater, so that the responses manifested by changes in refraction come some time after the concentration of sugar has changed in the blood. Tissue culture experiments have shown that crystalline lens epithelium grown outside the body will utilize extremely high sugar concentrations. I surmise that the deleterious action of increased sugar in the aqueous and lens is in the sensitive colloid of the lens protein. However, this may not explain the production of cataract in diabetes. There is a well known ocular pigment disturbance in diabetes causing exfoliation of pigment granules at the time of iridectomy, and occasionally separation of the pigment layers. This may indicate a condition that is caused by the diabetes, or it may be simply a coincidence. In either event the vacuolation and degeneration of the pigment epithelial layer extends well back into the ciliary epithelium and as such will surely affect the quantity and quality of the aqueous formed. This factor may be responsible for the development of the lens opacities in diabetes.

DR. ALAN C. WOODS, Baltimore: Of the 238 cases presented by Dr. O'Brien, 99, or almost 42 per cent, showed a fasting blood sugar of more than 120 mg. per hundred cubic centimeters. His analysis is concerned solely with these 99 patients. He states that there were 12 persons with clinical diabetes in this series. By this I would infer that he means there are only 12 patients who had a glycosuria, changes in the carbon dioxide combining power, or evidence of diabetes other than the fasting blood sugar. Examination of the tables shows that there were 3 patients with a fasting blood sugar of 202 mg. per hundred cubic centimeters, 21 with a fasting blood sugar of 217 mg., and 35 with a fasting blood sugar of 182 mg. I cannot but believe that these 59 patients must have diabetes, although only 12 are so diagnosed clinically. To my mind, the other 47 patients have the most dangerous type of diabetes—with a high renal threshold for sugar, the type of diabetes in which the patient is most liable to the various complications of the disease, of which the formation of cataracts is only one. When the dextrose tolerance test is considered, much the same situation is found. To sum this up, in the series of 238 cases there were 59 that I believe should be discarded as diabetes. This leaves 179 from which conclusions can be drawn. Among the 179 patients there were 39 elderly individuals, or 22 per cent, who had a moderately elevated fasting blood sugar, and probably about 18 patients, or 10 per cent, who showed abnormal blood sugar after a dextrose meal. In view of the age of these patients, the high frequency of arteriosclerosis in elderly individuals, and its influence on the blood sugar picture, these figures to me are far from convincing. The proposition advanced by Dr. O'Brien is, I think, of the greatest interest, even though I cannot agree that his figures present any confirmatory evidence.

DR. H. MAXWELL LANGDON, Philadelphia: Some years ago I became interested in the subject of the amount of sugar in the blood of persons with primary cataract and reported the results of observation of a few cases at the meeting of the American Ophthalmological Society in 1922. All cases that could be clinically diagnosed as diabetes were excluded from this series, the diagnosis depending on the general symptoms and urinalysis. A small percentage of them showed moderately high blood sugar and a much larger percentage showed a lowered sugar tolerance. At the Convention of English Speaking Ophthalmologists, held in London in 1925, I reported a series of 100 cases. Again in this series those in which the diagnosis of diabetes could be made without a study of the blood sugar were excluded. The proportions ran about the same as those of the first series as far as the blood sugar and the sugar tolerance results were concerned. It seems to me that the sugar tolerance test is of value in these cases as there are undoubtedly people who will do well with a moderate carbohydrate diet but will suffer from continual ingestion of high amounts of carbohydrates and these will be picked up only by such a test. The use of carbohydrates, especially sugar, in the diet of the American people has tremendously increased since the beginning of the nineteenth century. In 1798 the consumption of sugar in the United States averaged 6 pounds per capita and in 1923 it was close to 100 pounds. Now of course cataract has not increased in this country in anything like proportion, but it is quite possible that diabetes has, and it is known that any diabetic person is a potential sufferer from cataract, and those who cannot properly take care of the carbohydrates ingested should be picked up at the earliest opportunity and advised about proper diet. I believe that there are many cases of cataract in persons with unrecognized diabetes because the diagnosis has rested on a urinalysis and, as is quite well known, a kidney with a high threshold will not allow the sugar to appear in the urine even though there may be a great increase in the amount of sugar in the blood.

DR. C. S. O'BRIEN, Iowa City: I think there is some misunderstanding, since, as I have presented the subject, there has been no attempt to establish the fact that a large percentage of senile cataracts are the result of diabetes. The paper deals only with the question of the presence of hyperglycemia in persons with senile cataracts. Diabetes as a clinical entity did not

enter particularly into this study, except so far as there were a few cases of known diabetes incorporated in these statistics. The study was made to find out, if possible, whether there is a disturbance in sugar metabolism in patients with senile cataract, since it was thought that a prolonged hyperglycemia, even of mild degree, might cause changes in the transparency of the crystalline lens. Whether one should accept, in the dextrose tolerance test, a maximum of 240 mg. of dextrose per hundred cubic centimeters of blood or a maximum of 220 mg., is questionable. In our own laboratories normal individuals showed a maximum of 190 mg. of dextrose per hundred cubic centimeters of blood. I question the discarding of the fifty-nine patients which Dr. Woods mentioned. That cannot be done simply because the patients showed a hyperglycemia and were classed by him as diabetic, for the sugar is still present in the blood and eye fluids and would have the same effect whether or not the patients had diabetes. It is not a question of diabetes but a question as to whether an increased dextrose content of the blood and body fluids has any effect on the transparency of the lens. Certainly these fifty-nine patients who were not known to be diabetic and had not been on diabetic management must be included because of the fact that they had hyperglycemia.

DIAGNOSIS AND TREATMENT OF MALIGNANT CONDITIONS OF THE LARYNGOPHARYNX *

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Professor Boerhave of Leyden (1668-1738) and Morgagni of Padua described the appearances of cancer of the pharynx. But no great advance in knowledge of the disease in the pharyngeal region was made until 1854 with the discovery of the laryngoscope by Garcia.

Billroth in 1873 reported the first complete extirpation of the larynx. Fifty odd years ago, Morell MacKenzie said, "The only possible termination of cancer is death." The disasters of these early days caused Jacobson to write in his "Operations of Surgery":

> Until these operations—and I refer especially to laryngectomy partial and complete—are placed upon a more satisfactory basis, they should only be performed whenever this is possible, and it usually is so, by those who combine a thorough mastery of general surgical technic and an especial training in laryngology.

The operation of laryngofissure, as perfected by Sir St. Clair Thomson [1] and Chevalier Jackson, has made it a relatively safe procedure resulting in from 80 to 85 per cent of cures. In laryngectomy the technic as advanced by John Mackenty, Fielding O. Lewis, Lionel Coolidge and others has made it a justifiable operation resulting in a very high percentage of cures; whereas extrinsic cancer of the larynx so called, or, a better term, cancer of the laryngopharynx, has been and still is attended with a high mortality. The greatest advance in improvement of technic for eradication of the disease in this region has been made by Wilfred Trotter [2] of London, who has lowered the mortality from 50 to 25 per cent. In order that the risk may be still lower, early diagnosis is of the utmost importance. The tendency to slide over abnormal sensations in this region, without proper and thorough examination, permits the progress of the disease until too late for complete eradication.

WHEN IS A MALIGNANT CONDITION OF THE LARYNGOPHARYNX TO BE SUSPECTED?

In middle-aged and elderly people any kind of abnormal sensation persistently felt in the same part of the throat should be regarded seriously. For a long time the condition does not give rise to any marked symptoms. It is not uncommon for patients to consult physicians for enlarged glands in the neck along the sternocleidomastoid muscle. And too often these glands are removed before thorough examination has been made.

Subjectively, the patients may complain of a tickling sensation in the throat, like a crumb of bread. Discomfort in swallowing, alone but none with meals, may or may not be accompanied with pain. In very early cases there is no pain, no trouble in swallowing, no alteration in voice and no loss of weight. Occasionally patients may have some pain or vocal fatigue on speaking.

Fig. 1.—Lateral transthyroid pharyngotomy, showing flap of skin turned in behind the larynx to form the new esophagus. This defect was later closed by plastic operation.

If the deep portion of the pyriform sinus is involved, the posterior branch of the inferior or recurrent laryngeal nerve may be involved, which causes an anesthesia or analgesia of the upper portion of the larynx, or a paralysis of some of the intrinsic muscles, which will result in slight attacks of choking between or during meals, huskiness of voice, and fixation of arytenoids (not subjective); patients may complain of a large amount of mucus in the throat, and then again the first sign to cause them to seek medical advice may be a large gland in the neck; this may not be carcinomatous.

HOW MAY A PROBABLE DIAGNOSIS BE MADE?

When a patient of 40 or over complains of pain in the retrohyoid region, with huskiness of voice, pain and difficulty in deglutition, and swelling in the median or lateral portion of the neck along the border of the sternomastoid muscle, a malignant condition must be thought of and a very careful examination should be made.

* Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Thomson, St. Clair: Cancer of the Larynx, New York, Macmillan Company, 1930, p. 7.

2. Trotter, Wilfred: Principles and Technique of the Operative Treatment of Malignant Disease of the Mouth and Pharynx, Lancet 1: 1075 (April 19), 1147 (April 26) 1913.

The most important part of the examination is often overlooked, not because it is difficult, but because of not getting a clear view; namely, the laryngologic examination. The physician must obtain a good view of the hypopharynx, must see the movements of the arytenoids on phonation and inspiration, and must ascertain whether they have mucus in the pyriform sinus which cannot be emptied by swallowing. The laryngeal picture may give the appearance either of a chronic ulcer with raised margins and depressed ulcerating center or of a sessile growth projecting into the lumen; fixation of the arytenoids may be noted, or the cavity may be filled with a large mass, the surface either ulcerating or sloughing. If the arytenoids are fixed and no growth is seen, then the pyriform sinus may be the location of the growth. The patient is instructed to say "E," thus elevating the larynx and bringing into view a slight edema below the arytenoids; if the upper edge of an ulcer is seen, it is diagnostic of a malignant process. Further study with roentgen rays, followed by direct laryngoscopy or esophagoscopy with removal of a specimen for biopsy, will complete the examination. Forward displacement of the larynx and palpation of the growth with enlarged fixed glands are all late signs.

HOW MAY THE GRAVITY OF THE CASE BE ESTIMATED?

If, on examination, a fixed arytenoid with large ulcerations is found, it is clear that the pyriform sinus is involved, which usually signifies a very late stage. A movable arytenoid with a large growth is more favorable. Then again the operability of the growth may be determined only by actual exploration with or without the pharynx being opened.

In a recent article, Lewis [3] states: "At present we must rely upon methods which have been employed for some time; chief among these are surgery and radium. If surgery is to secure the best results, the diagnosis must be made early."

The best method of approach to cancer in the region of the pharynx is either by the lateral transthyroid pharyngotomy of Trotter,[4] or by anterior translingual pharyngotomy.

Drawbacks to operations on the laryngopharynx may be classified, according to Trotter,[5] into three groups: (1) the uncertainty of cure, which is the most important; (2) the danger of the operation and the distresses of convalescence, and (3) the mutilation and disability that may be left by an operation otherwise perfectly successful.

After a preliminary tracheotomy, the incision for ordinary transthyroid pharyngotomy would be along the anterior border of the sternomastoid muscle, reflecting anteriorly and posteriorly the muscles of the larynx. But, as most of these patients by the time they are examined have enlarged glands of the neck, either from infection or from lymphatic extension, it becomes necessary to perform a resection, and the former incision is inadequate. An additional incision is then made, more or less at right angles to the original one, running from the angle of the lower jaw downward, forward and upward to the symphysis. These flaps and the platysma are turned back; the superficial fascia, the submaxillary gland and the deep fascia are likewise removed upward and backward as far as the spinal accessory nerve and the posterior triangle. This step exposes the deep vessels of the neck and the muscles surrounding the larynx. All the vessels that come off anteriorly from the great vessels are ligated and cut. The internal jugular is ligated and resected. The external carotid may or may not be ligated. The sternomastoid may or may not be removed, depending on the glandular involvement.

The next step is to suture the sternomastoid to the prevertebral fascia; this covers the great vessels and thus protects them from infection when the pharynx is opened. The area is drained by a counter opening posteriorly.

The following muscles are then reflected from the hyoid bone and thyroid cartilage: the hypoglossal,

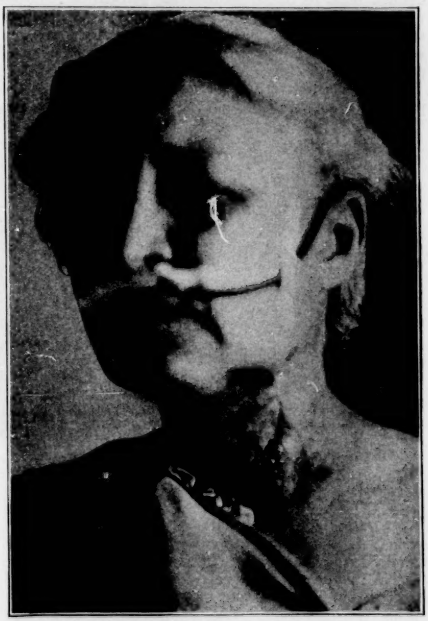

Fig. 2.—The result of plastic closure.

thyrohyoid, sternohyoid, sternothyroid, stylopharyngeus, and the inferior and middle constrictors of the pharynx. One is then ready to remove, by means of heavy scissors, the exposed portions of the hyoid bone and the greater portion of the thyroid cartilage. This permits one to palpate the growth through the pharyngeal aponeurosis and mucous membrane, and to decide where to make the opening into the pharynx so as to be well around the malignant area; or, if the growth is too large to remove, one may back out, so to speak, and not proceed any further.

The next step is to open the pharynx; an incision is made which gives an approach to either a hypopharyngeal or an epilaryngeal growth and which may be continued upward through the mandible, as in one of my cases, to remove a growth higher up, or downward to the clavicle.

3. Lewis, Dean: Am. J. Cancer **15**: 4 (Jan.) 1931.
4. Trotter, Wilfred: Purvis Oration on the Surgery of Malignant Disease of the Pharynx, Brit. M. J. **1**: 269 (Feb. 13) 1926.
5. Trotter, Wilfred: A Method of Lateral Pharyngotomy for Exposure of Large Growth in the Epilaryngeal Region, J. Laryngol. Rhinol. & Otol. **35**: 289 (Oct.) 1920.

of a longer duration, and local anesthesia will not do because the shock is considerable. Doing a plastic closure is one of the most difficult things, trying to sew something around the neck made up of skin that will function anything like the organ that the patients need for swallowing; namely, an esophagus.

DR. HENRY B. ORTON, Newark, N. J.: Dr. Mosher suggested the two-stage operation last year, but I have not tried it. As to swallowing, that brings up the same point Dr. Beck mentioned. With the last patient I may have some trouble. I find I have some trouble as long as the tube is in. Whether it is fixation from the tracheotomy tube I do not know, but the patients swallow better without it. As to plastic operations, the case I showed in which I took a piece of skin from the upper part and turned it in was a male patient, and that worked very well. I have used diathermy and radium afterward. I have also used rectal anesthesia.

REATTACHMENT OF THE CAPSULE AND EXTERNAL ROTATORS OF SHOULDER FOR OBSTETRIC PARALYSIS *

SAMUEL KLEINBERG, M.D.
NEW YORK

From the point of view of practical therapeutics, the chief cause of the disability of the arm in obstetric or Erb's palsy of the upper arm type is the fixation of the limb in inward rotation and the inability of the patient to rotate his arm outward. In the severe form of this deformity the individual cannot bring the palm of his hand to his face. When he abducts his arm the radial border or the back of the hand faces the head. There is usually poor abduction of the shoulder, which further compromises the function of the limb. Frequently, too, the motion in the elbow and wrist is limited, and what little power there might be in these joints is entirely nullified by the disadvantageous position of inward

Fig. 1 (case 1).—Right obstetric paralysis: shortening and atrophy of the entire right upper extremity, flexion of the elbow and flexion and ulnar deviation of the hand.

rotation. Thus there is, in the severe form of obstetric paralysis, actually no useful range of function in the affected member.

Some time ago I observed that, even in the most marked cases of obstetric or Erb's palsy of the upper arm type when the patient's arm was held in outward rotation, he could bring the palm of his hand to his mouth and could reach to the opposite shoulder, the top of his head and the back of his neck, that is, he could perform many important movements. Therefore, it became apparent that the essential need in the therapy was some means whereby the arm could be permanently fixed in outward rotation without the encumbrance of external apparatus.

This fact has long been recognized, because an important element in all forms of treatment has been immobilization of the limb in outward rotation. In infancy, cases of Erb's palsy are treated by applying an abduction splint that supports the arm continuously in abduction and outward rotation. In childhood, the arm is frequently stretched under an anesthetic and fixed for a time in a plaster-of-paris shoulder spica bandage. Dr. Sever of Boston, appreciating that the dysfunction is mainly the result of the attitude of inward rotation, sections the tendons of the subscapularis and pectoralis major[1] at their attachment to the humerus and immobilizes the arm in outward rotation. Some have done an osteotomy on the shaft of the humerus and rotated the lower fragment outward. In the majority of cases one or another of the aforementioned methods yields a satisfactory result, but there is a strong tendency to recurrence of the deformity. Stretching of the shoulder, as that of any other joint for deformity, does not prevent recurrence of the contracture. Sever's operation, while giving excellent results in many cases, does not establish any positive check to inward rotation of the arm. An osteotomy of the humerus does nothing to correct the deforming elements at the shoulder. Therefore, I sought a measure that would actively check rotation of the arm and fix the limb in an attitude of outward rotation, which is the position in which the weakened muscles can function to advantage.

Fig. 2 (case 1).—When the arm is abducted and the elbow flexed, the back of the hand is in contact with the face. On account of the fixed inward rotation of the arm it is impossible to bring the hand to the top of the head.

At first I performed an arthrodesis of the shoulder[2] and fixed the arm in abduction and outward rotation. This did give the desired result in that the patient was able to bring the hand to his mouth and to the top and back of his head, and he was able to use the hand for many functions, previously impossible. But there was permanent limitation of shoulder movement which was manifestly undesirable. It occurred to me then that I might accomplish my purpose by reattaching the capsule of the shoulder joint and the tendons inserted into the greater tuberosity of the humerus. With that end in view the following operation is performed:

AUTHOR'S OPERATION FOR RESISTANT OBSTETRIC PARALYSIS

A vertical incision is made over the antero-external aspect of the shoulder from the acromial process almost down to the deltoid tubercle. The fibers of the deltoid

* Read before the Section on Orthopedic Surgery at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Sever, J. W.: Obstetric Paralysis: Its Cause and Treatment, Canad. M. A. J. **10**: 141 (Feb.) 1920.
2. Kleinberg, Samuel: Arthrodesis of the Shoulder for Obstetrical Paralysis, Arch. Pediat. **41**: 252 (April) 1924.

are cut vertically and separated laterally, exposing the shoulder joint. A vertical incision is made into the capsule of the joint; this incision is carried down through the periosteum for about an inch and a half below the anatomic neck of the humerus. At the lower level of this cut the periosteum is incised transversely and is elevated from the bone on the outer side. In this flap are included the joint capsule and the tendons inserted into the the greater tuberosity with a bit of the underlying cartilage and bone. It is important to keep this flap intact. This might appear to be technically difficult, but actually it is simple. The periosteum is then elevated from the inner side of the humerus. Included in this layer are the inner part of the joint capsule and the tendon of the subscapularis muscle. When these two layers of periosteum and capsule have been freed from the circumference of the humerus, the arm can be rotated outward completely and freely. With the arm in outward rotation the outer flap of capsule, tendons and periosteum comes into contact with the anterior surface of the humerus and ultimately heals and becomes fixed at a point at least an inch, and often even a little more, in front and to the inner side of its former attachment. The inner flap is placed without tension over the outer flap and sewed to it. The wound is closed with a few interrupted chromic catgut sutures for the deltoid muscle and a continuous silk suture for the skin. To insure undisturbed healing, the arm is supported in a plaster-of-paris spica in abduction and outward rotation.

In this operation three things are accomplished: First, the subscapularis tendon is detached and the deforming pull of this muscle is released. Second, an active check against inward rotation of the arm is established by the transfer to the front of the humerus of the outer portion of the capsule, including the tendons attached to the greater tuberosity and the outer layer of periosteum. These structures, fixed above to the glenoid process and posterior surface of the scapula, act as a strong wide ligament and a positive check to inward rotation. Third, the weakened external rotators, namely, the infraspinatus and teres minor muscles, now attached to the front of the humerus, can maintain it in outward rotation. The second and third features are the important elements in the operation.

Fig. 3 (case 1).—The patient's ability to bring the palm of the hand to the mouth after operation.

This operation is intended to be used only in cases of the upper arm type of Erb's or obstetric palsy in which there is at least a fair degree of active motion in the elbow and hand. If the nerve lesion is so extensive that there is complete loss of function in and below the elbow, it would be useless to change the attitude of the arm. The operation is indicated especially in the treatment of older children in whom conservative measures have not given a satisfactory result. It is further advisable in those cases in which there is a strong tendency to recurrence of the deformity. Lastly, the operation should be performed in all instances in which there is such a strong and resistant contracture of the tissues at the shoulder joint that it is not likely to be corrected by conservative treatment.

The beneficial effects of this operation are manifest not only at the shoulder but also at the elbow and in the hand. With the arm in outward rotation the function of the whole limb is improved, and the patient, finding himself able to do many things which he previously was incapable of, presses the advantage and engages in freer and more vigorous activity, especially in performing those operations which pertain to his personal needs, such as dressing, combing his hair and feeding himself. In a short time there is not only increased mobility of the shoulder but a greater range of motion in the elbow. Rotation of the forearm is increased by repeated attempts to accomplish that which has always been difficult. The greatest practical benefit is in the easier use of the hand. When the arm in the attitude of deformity, namely, inward rotation, is abducted, the back of the hand is turned toward the face and the hand is of little use, even though the fingers can be moved. But when the deformity at the shoulder is corrected, the palm of the hand faces the head. After the operation the patient can bring his fingers to his face, the head and the opposite shoulder. He begins to use his fingers freely and in time acquires considerable dexterity.

Fig. 4 (case 1).—The patient's ability to reach the top and the back of the head after operation. There is general improvement in function in the whole limb.

REPORT OF CASES

CASE 1.—Beatrice B., aged 6 years, was treated at the Hospital for Ruptured and Crippled. Advice was sought for deformity and defective function of the right upper extremity. The disability was noticed immediately after birth, which was by instrumental delivery and unusually difficult. At the age of 9 months the brachial plexus was operated on, but without any benefit. Physical therapy had been used almost continuously with little, if any, improvement. Examination showed that the right upper extremity was in an attitude typical of obstetric paralysis. The arm hung by the side in marked inward rotation; the elbow was flexed; the forearm was pronated, and the hand was flexed and in ulnar deviation (fig. 1). The right upper limb was one inch shorter than the left. When the arm was abducted the dorsum of the hand came into contact with the face and she was unable to bring the palm of her hand to her mouth (fig. 2).

She was operated on, Jan. 22, 1924. As this was one of my earliest operations for obstetric paralysis I did the reattachment operation previously described, but I also scarified the joint cartilage. The result, as seen in figures 3 and 4, was most satisfactory. She obtained an improvement in the function of the whole limb but especially in that of the hand.

CASE 2.—David G., aged 5 years, was treated at the Hospital for Ruptured and Crippled. He had an obstetric palsy of the left arm, noticed immediately after birth. Physical therapy had been used for the first three months of his life and not since. Examination, Jan. 23, 1924, showed that he had a typical deformity of his left arm, with flexion contraction at the elbow and wrist. He could not reach the top or back of his head with the affected hand, and, in bringing his hand to his face, the dorsum of the hand touched his mouth.

He was operated on, January 24. As in the previous case, a reattachment of the capsule and associated structures at the shoulder joint was done, and in addition the cartilage was removed from the articular surfaces. The result has been most satisfactory as he has been able to bring the palm of his hand to his mouth and to the top and back of his head.

CASE 3.—Gerard G., aged 8 years, was treated at the Hospital for Ruptured and Crippled for obstetric paralysis of the right

arm. The deformity was noticed at birth. At the age of 3 years the brachial plexus was operated on without beneficial result. He was seen by me in July, 1925. He had the typical deformity of the arm with marked shortening and atrophy. He was unable to bring his hand to his mouth or to the top of his head. There was marked posterior subluxation of the head of the humerus and downward projection or lipping of the acromial process. All the muscles at the elbow and wrist joints were very weak.

July 2, he had the first simple reattachment operation on the shoulder without any disturbance of the articular cartilage. The result, considering the extensive involvement of all the

Fig. 5 (case 8).—Left obstetric paralysis: deformity of the limb and especially the defective function of the hand. The patient cannot bring the palm of the hand to the face.

muscles, was very good. He was able, after removal of the plaster, to bring his hand to his face and head. Some time later he fell into the hands of an exceptionally ambitious surgeon, who performed an ill advised operation on the shoulder, following which the function of the arm diminished to what it was before my operation.

CASE 4.—Sylvia K., aged 6 years, came under my care at the Hospital for Ruptured and Crippled in November, 1925. She had an obstetric palsy of the right arm with a typical deformity and the usual disability.

November 3, a typical reattachment operation was done and the usual after-care was given. In an examination, Jan. 18, 1930, more than four years after the shoulder operation, the function of the arm was found greatly improved and the operation entirely successful.

CASE 5.—Paul R., aged 8 years, was treated at the Hospital for Ruptured and Crippled. He had obstetric paralysis of the right arm. He was treated more or less continuously since birth, but without much benefit. An examination, Feb. 25, 1926, showed a marked deformity. There was marked atrophy of the limb, inward rotation of the arm, flexion at the elbow, and slight power in the muscles of the forearm and hand.

March 9, the typical operation with reattachment of the capsule and adjacent structures about the affected shoulder was done. After the removal of the plaster splint he began to use the right arm much more freely than before the operation, and the improvement has progressed slowly but steadily.

CASE 6.—Mary A., aged 5 years, was treated at the Hospital for Ruptured and Crippled. She had a very severe obstetric palsy of the left arm. At the age of 1 year she had a thorough stretching of the shoulder under an anesthetic and temporary immobilization of the arm in abduction and outward rotation. For the following two years, physical therapy was used. After this, treatment was discontinued until I saw her in January, 1928. At that time she had a typical deformity with marked disability.

January 30, the reattachment operation previously described was done. The result in this case has been very satisfactory so far as the use of her hand is concerned. Unfortunately, there is fixation of the shoulder at about 70 degrees of abduction, so that, when she brings her arm down to her side there is undue prominence and projection of the scapula.

From the experience in this case I am inclined to believe that in this type of shoulder work one does not need to immobilize the arm for more than two or three months, nor should one fix the arm in more than 60 degrees of abduction.

CASE 7.—Martha S., aged 6 years, was also treated at the Hospital for Ruptured and Crippled. She had an obstetric or Erb's palsy of the right arm. There was a typical deformity of the upper arm with posterior subluxation of the shoulder. The elbow was flexed; the forearm was in pronation, and the hand and fingers were in palmar flexion. She could bring her hand to her mouth but could not reach the top of her head.

Dec. 23, 1929, the operation of reattachment of the capsule and external rotators of the shoulder was performed. When the original dressing and plaster support were removed three months after the operation she was not only able to get her hand to her mouth easily but was able also to touch the top and the back of her head.

CASE 8.—Peter A., aged 9 years, was treated at the Hospital for Joint Diseases. He had obstetric paralysis of the left arm. The limb was atrophied, the elbow somewhat flexed and the forearm in pronation. When he abducted his arm and flexed his elbow, the dorsum of the hand faced his mouth, as shown in figure 5. From this illustration it is evident, too, that he could not bring his hand to the top or the back of his head. Thus he had very marked disability in the left arm.

Oct. 11, 1929, the typical reattachment of the shoulder capsule and tendons of the external rotators was performed. The result has been most satisfactory. He can now bring the palm of his hand to his mouth, can reach the top of his head easily (fig. 6), and is using the left arm frequently and very well.

Recently my associate Dr. M. H. Herzmark had a particularly severe case of obstetric palsy in a vigorous man, aged 26. He performed the operation that I described with a most fortunate result. Whereas previous to the operation the man had very little use of the affected limb, he now employs it liberally in his work as an automobile mechanic. Although I have not used this operation of reattachment of the capsule and tendons of the external rotators of the shoulder for obstetric palsy in many cases, the results are encouraging because there has been marked and lasting improvement in all the functions of the limb.

It is perhaps well at this juncture to recall and emphasize certain limitations in the results of treatment

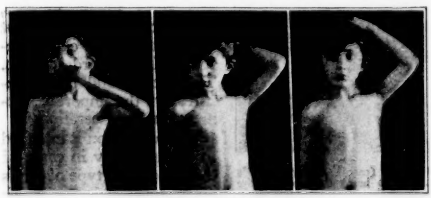

Fig. 6 (case 8).—After operation. There is a remarkable improvement in all the functions of the limb, especially in the freer use of the hand.

that are inevitable in obstetric paralysis. There is, for instance, usually some restriction of flexion and extension at the elbow joint. This is due to contraction of the capsule and tendons about the elbow, and probably also to a certain amount of irreparable damage to the nerve supply of the muscles controlling the elbow movement. This defect cannot be rectified by an operation on the shoulder. To this circumstance, one must, for the present, submit. But it should be taken into consideration in an estimate of the results of the operative treatment on the shoulder. Similarly, there may be

weakness of the hand due to a disturbance of the nerve supply of the forearm muscles. This may be overcome somewhat by the increase in the general function of the limb which results from the reduction of the deformity, but some weakness will remain permanently.

SUMMARY

1. The chief cause of disability in obstetric palsy is the resistant inward rotation of the arm.

2. The permanent correction of this deformity can be accomplished through an operation on the shoulder in which the outer part of the joint capsule, including the external rotators, is transplanted forward on the humerus, and acts as a check against inward rotation of the arm.

3. The improvement in function affects not only the shoulder but also the elbow, wrist and fingers.

4. Ten patients have been operated on—nine by me and one by a colleague.[3] All have shown marked improvement.

5. The operation is indicated in the upper arm type of obstetric palsy, especially when there is fair power in the forearm and hand.

1 West Eighty-Fifth Street.

ABSTRACT OF DISCUSSION

DR. LEO MAYER, New York: I have had a chance to see a number of Dr. Kleinberg's patients and I wish to corroborate in every detail what he has reported about the excellent results. I want particularly to comment on the last case, the adult in whom the marked disturbance in the arm occurred and who was operated on by Dr. Hertzmark. The improvement was remarkable and I question whether any other type of operation would have made it possible to secure such a complete correction of the deformity. I do not wish to imply any disparagement of the Sever operation. I think that Dr. Sever's work has been excellent, and up to the present time I have used his operation in all my cases. In addition to the division of the subscapularis and pectoralis major, it is wise to divide the teres major and latissimus dorsi, a step which Dr. Sever also does at present, and following the complete division of these tendons and proper postoperative care, I have not seen any recurrences in my series of cases; and yet there is something about the simplicity of Dr. Kleinberg's operation which appeals to me and inclines me to give his operation a trial in the future. It is always hard to decide between two excellent procedures. Which is going to prove better I do not think can be decided at the present time. It is always well to have a choice in different operative procedures so that, depending on the particular individual indications, one can vary the technic at his disposal.

DR. ARTHUR KRIDA, New York: In looking over a large series of cases of obstetric paralysis at the Hospital for the Ruptured and Crippled, I am impressed with the extraordinarily good prognosis of these cases, if the patients are treated early and sufficiently long by the familiar abduction external rotation splint, and with the fact that the longer the splint is continued, the more perfect the recovery is and that the percentage of those which result in eventual deformity of an operative type is small indeed. That, of course, defines the indications for Dr. Kleinberg's operation. It is decidedly an operation that is limited to those individuals, perhaps over the age of 6, who have gone through the minor forms of expectant treatment and who have resistant deformities. I have seen Dr. Kleinberg do his operation once or twice and have had the opportunity of seeing nearly all the patients he has operated on. The end-results are highly satisfactory. I should like to ask Dr. Kleinberg whether he has ever found it necessary in these operations to lengthen or section the tendon of the pectoralis major muscle.

3. This includes a case previously reported.

DR. DEFOREST P. WILLARD, Philadelphia: I think one finds in all cases that the marked pronation of the lower arm and the lack of use of the hand is what disables the patient more than any other one thing, and Dr. Kleinberg in his demonstration has certainly shown that his operation will correct that major deformity. In our younger patients, the babies and the younger children, in Philadelphia, we have always been satisfied with the abduction and rotation splint method; if this method is kept up long enough the results are good, and as far as we can see in our cases the results have been permanent. It is in the older patients that we have not been satisfied with our treatment. We have tried several times to correct this marked pronation of the arm, either with tenotomy or with the transplantation of the pronator radii teres, hoping to give greater pronation to the lower arm. In many cases it has worked well and in many cases it is quite unsatisfactory. Dr. Thomas's method of operation on the shoulder joint and posterior subluxation has not been a very satisfactory correction and I believe that Dr. Kleinberg has given us the best and the simplest operation possible for this correction. As in all good operations, success or failure will depend on the careful selection of the cases, and when we all have more experience, we shall be able to place the indications of the operation more accurately perhaps than at present. It certainly is one which, in the older cases of stubborn deformity in which the forearm still retains its practically normal function, should be the operation of choice.

DR. JAMES WARREN SEVER, Boston: In Dr. Kleinberg's operation, he relieves to a certain extent the contractures of internal rotation. It seems to me that he does not go quite far enough. In all the cases in which we have operated at the Children's Hospital in Boston, our difficulties have been not from a recurrence of the internal rotation but because the patients had a certain amount of permanent outward rotation which we purposely established. It seems to me that Dr. Kleinberg does not take into consideration the constant pull of the pectoralis major. It is essential to divide this completely. The contracted coracobrachialis is also a deforming factor and should be cut. We have found that long fixation and opening of the capsule of the shoulder joint, which he carefully avoided, but which we did at first in the Fairbanks procedure, caused stiffness of the joint and always led to subsequent disability. In all cases of persistent weakness or difficulty of movement, which occurs in upper arm types, the operation has never led to a regeneration, even partly, of the power in the infraspinatus and supraspinatus muscles, so that if one transplants those muscles as Dr. Kleinberg does, using them as two check ligaments, it seems inevitable that they must stretch. In the future there may be then a recurrence of the internal rotation deformity. What he does about the bony deformity I don't know, but with the persistence of the internal rotation there is a tendency to subluxation posteriorly of the head of the humerus with secondary acromial deformity, sometimes very marked. The acromion has always to be removed before the head of the humerus can be put back in the glenoid cavity, and that has not been taken into account. Anything that allows outward rotation to any extent inevitably improves the arm. One should not forget that these operations are patchwork and what one does is patchwork, but anything that corrects the internal rotation is a help. It is impossible for these children to hold their arms up before operation. It is impossible for them to get their hands to their mouths without raising their elbows, and anything that gives them outward rotation enables them to get the hand to the mouth and to the back of the head.

DR. A. M. RECHTMAN, Philadelphia: I have operated in two of these cases since I first heard the presentation of the last case at the Hospital for the Ruptured and Crippled about eight months ago. The first was in a girl, aged 16, in whom a subperiosteal stripping was performed, and everything worked beautifully. The second case is of greater interest. It was that of a boy, aged 17 years, who, when he was 6 months of age, had an incision over the anterior part of the shoulder blade for a disability the history of which I was unable to learn, but it was presumably a birth injury. The stripping was much more difficult than in the first operation and in attempting to rotate the arm externally, when I thought every-

thing was free, I heard something snap and found that a separation between the head of the bone and the shaft had occurred. I rotated the arm back to internal rotation and was then again able to effect external rotation of the head and shoulder, moving as one part, showing that the stripping was entire and that the head and shaft moved as a single unit. I presume that the adhesions and injury previous to the first operation perhaps caused this fracture to occur when I operated some sixteen years later. Another thing of particular interest that occurred is that there was a paralysis and the boy could not move his fingers after the operation. In my stripping I presume that I injured some nerve fibers by going a little lower than Dr. Kleinberg does in his operation. I thought it of value to report the occurrence at this time as a word of warning about going a little low and injuring the nerve fibers. I kept the boy in plaster for a few months so as to give sufficient time for the separation between the head and neck of the bone to heal, and when I removed the plaster, within the past week, the boy had an excellent return of function in the nerves. It may be that the nerves were tied down pretty close to the bone and the scar of the previous operation may have accounted for the nerve injury, as I had considerable difficulty in stripping the periosteum.

DR. SAMUEL KLEINBERG, New York: I have had only ten cases of my own and one of an associate. The best thing one can remember is Dr. Sever's statement that any work with the resistant obstetric palsies is patchwork. One is trying to improve the function. My original motive in seeking another operation was to do something that would give the individual permanent outward rotation; that is, instead of having an individual whose continuous position was that [indicating], or the neutral position for him was that, namely, one of inward rotation, I attempted to give him a neutral position of outward rotation. Originally I abducted the arm too much and got a certain amount of fixation, but now I rotate the arm fully but don't abduct any more than 60 or 65 degrees. I think that is ample. I have done nothing to the coracoid process because I get complete outward rotation if I separate the periosteum circumferentially. The humerus can then be rotated freely and placed in the optimal attitude. I realize from what I know of Dr. Sever's work that perhaps the coracoid should be fractured, but I have had no occasion to do it in any of my operations. I have been able to obtain the position I thought necessary without doing anything at all to that bony projection. So far as the reduction of the posterior dislocation is concerned, its management has been simple when the subperiosteal stripping has been complete. There has been no evidence of any tendency toward redislocation. Dr. Krida asked about the pectoralis major. Possibly some of this comes along with the subscapularis in the inner flap of periosteum. I do not lay particular stress on it. I don't attempt deliberately to strip the pectoralis major away from the humerus, but I strip the inner side of the periosteal flap with the subscapularis muscle to a third of the way round the humerus and then strip the outer flap two thirds of the way round. I then find that the humerus can be rotated easily, and I place it in complete outward rotation and sew the flaps together. The outer flap is brought forward as far as possible, and, with the arm in outward rotation, the flap is secured with one or two sutures wherever it comes in contact with the humerus. I do not look for the long tendon of the biceps. If the flap comes into contact with it, I suture it there and do nothing further. So far I have not seen any interference with the biceps muscle. I have been surprised to see so little disturbance of the muscle function. Dr. Sever has said that the external rotators theoretically should not work well after the operation, but actually they do. They hold the arm well and have a collateral nerve supply which gives them the opportunity of functioning. There is this, however, which Dr. Sever emphasized and I should like to mention: the possibility of a persistent attitude of outward rotation. This isn't an operation that doesn't cause some sacrifice. There is a certain amount of fixed outward rotation. The patient is not able freely to rotate inwardly. I select an attitude of moderate outward rotation for the final position. I see that the hand reaches the mouth easily and can be brought to the head, and in that position I finally sew the wound.

POLYNEURITIS FROM TRICRESYL PHOSPHATE*

BENJAMIN T. BURLEY, M.D.
WORCESTER, MASS.

A type of paralysis involving thousands of cases throughout the continent, caused by a product new to medicine and evidently arising from a single source, is so unusual that its effects should be a matter of record. Such was the polyneuritis caused by tricresyl phosphate adulterating extract of jamaica ginger, which arose in epidemic form in many sections of the country, early in 1930.

The use of jamaica ginger extract, at least in New England, had for many years been the first thought in many families in cases of gastric distress. Only comparatively recently has it come into more general use among alcoholic addicts as a substitute for, or in combination with, other substances containing alcohol. Had the adulteration with poison occurred in earlier generations before there were more modern remedies for gastric disturbances, it is probable that the type of patients becoming victims of this paralysis would have been different from those now affected in this age of adulteration.

The distribution of the poisoned ginger in various parts of the country is quite remarkable, and it appears that the distribution at a greater distance from its source took place rather earlier than the distribution of it in the state where the product was manufactured. In this connection it is interesting to read the report of Harris,[1] from an isolated hamlet in southern Alabama, situated 25 miles from the nearest railroad, with a population of only about 100, where, as early as February, 1930, several inhabitants in this hamlet were affected by the typical paralysis that is pathognomonic of the effects of the poison in all instances.

The report of Major Hume[2] from Fort Benning, Georgia, also cites several cases that occurred two months earlier than the incidence of the cases in Worcester. The localities suffering the greatest damage outside of those just mentioned were situated in Oklahoma,[3] Tennessee,[4] Ohio,[5] Kansas,[6] Kentucky, Mississippi, Massachusetts[7] and, more recently, California.[8] There has been, so far as I know, no complete tabulation of the number of cases occurring throughout the country; but it is estimated that there have been at least ten to fifteen thousand cases.

The occurrence of a new type of disease in epidemic form in any community is rather rare, and, naturally, considerable discussion and excitement occur with its onset. So it was with the 1930 paralysis. At first there were many who doubted that the extract of jamaica

* By tricresyl phosphate the author means triorthocresyl phosphate.

* Read before the Section on Nervous and Mental Diseases at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Harris, Seale, Jr.: Jamaica Ginger Paralysis, South. M. J. **23**: 375-380 (May) 1930.

2. Hume, E. E.: The First Cases of Jamaica Ginger Paralysis in the United States Army, Mil. Surgeon **67**: 621 (Nov.) 1930.

3. Turley, L. A.: Neuropathology Found in Cases with "Jake" Paralysis, J. Oklahoma M. A. **23**: 193-195 (June) 1930.

4. Morgan, H. J.: Epidemic of Symmetrical Neuritis in Tennessee, J. Tennessee M. A. **23**: 175 (May) 1930.

5. Vonderahe, A. R.: Pathologic Changes in Paralysis Caused by Jamaica Ginger, Arch. Neurol. & Psychiat. **25**: 29-43 (Jan.) 1931.

6. Millis, E. R.: Cause of "Jake" Paralysis, J. Kansas M. Soc. **31**: 359 (Oct.) 1930. Brown, E. G.: Epidemiological Investigation of Jamaica Ginger Paralysis Cases, ibid. **31**: 362-365 (Oct.) 1930.

7. Burley, B. T.: The 1930 Type of Polyneuritis, New England J. Med. **202**: 1139-1142 (June 12) 1930. Goodale, R. H., and Humphreys, Margaret B.: Jamaica Ginger Paralysis, J. A. M. A. **96**: 14 (Jan. 13) 1931.

8. Smith, M. I., and Elvove, E.: Epidemic of Ginger Paralysis in Southern California, Pub. Health Rep. **46**: 1227 (May 22) 1931.

ginger carried the potent factor; but the weight of evidence soon overcame this obstacle, although many of the patients denied having taken jamaica ginger, the concoction evidently being put in mixed drinks. The causal factor long lay in obscurity in spite of the efforts of chemists to determine it. After a few months, however, Dr. Smith and his associates [9] in Washington isolated the poison and cleared up that part of the problem.

In Worcester, it was with some difficulty that the jamaica ginger, which had been widely distributed in 2 ounce bottles to small dealers throughout the community, could be removed from sale, partly because the authorities were at a loss whether to consider it a beverage or to attack the problem through the Food and Drugs Act. Publicity regarding the danger of drinking the product was evidently the chief prevention of innumerable more patients becoming paralyzed. Even as late as December, 1930, the proprietor of a small grocery store sold a few more bottles of the poisonous product from a back shelf, and one more case of paralysis developed therefrom.

In almost every instance, earlier patients had destroyed the evidence of what they drank; and it was not until this fresh case appeared that we prevailed on the family of the victim to produce a 2 ounce bottle of the potent extract.

Dr. Smith kindly analyzed the contents of this bottle and reported that it contained about 2 per cent of tricresyl phosphate. With this definite evidence at hand there has been more productive assistance from both local and federal authorities toward solving the problem of the original adulteration by the manufacturers. At present, the latter are under suspended sentence charged to assist the government in tracing the original poison. The trail is said to lead to New York, whence phantom driverless trucks seem to have delivered it to its destination.

There were more than 100 cases in the Worcester area, 64 of them being under treatment at the neurologic department of the Worcester City Hospital, beginning early in April, 1930. The cases were so severe that all but eight of the patients had quadriplegia, and in these eight the lower extremities were paralyzed.

There were no cases in children or young people. The average age was 49 years. One eighth of the patients were women. In numbers, the Irish race led, followed by those of Slavic extraction. Contrary to reports from the South, suggesting exemption of the Negro race, three of our patients were Negroes. The majority were moderate users of alcohol and only a small number presented the physical signs of chronic alcoholism.

SYMPTOMATOLOGY

The onset in these cases occurred in from one to three weeks after the 1930 brand of jamaica ginger was taken. Only occasionally was there any evidence of gastric disturbance, diarrhea or constitutional discomfort. The first definite symptom was a sense of coldness, heaviness or soreness affecting both calves, one patient stating that they felt as if he had walked 20 miles. After two days this soreness gave way to weakness of the anterior tibial group of muscles, causing toe drop and difficult locomotion. Still station is from then on practically impossible for several months until partial recovery has occurred.

During the first two or three weeks of lower leg paralysis, hyperhidrosis of the legs and feet is common and is followed subsequently by cyanosis, mottling and coldness of the extremities affected. The leg weakness in severe cases may extend to the midthigh, only rarely involving sphincter muscles.

In all but the mildest cases, double wrist drop occurs in from seven to ten days after the foot drop. Even though the wrist drop is not complete, the intrinsic muscles of the hand, including the interossei and those situated at the thenar and the hypothenar eminences, are paralyzed and later become atrophic.

There is a characteristic reaction of degeneration in all paralyzed muscles. These muscles regularly fail to react to the faradic current until after recovery has taken place. The reaction to the galvanic current is likely to diminish in the most severe cases when extreme atrophy has occurred.

There is characteristic absence of sensory changes in the paralyzed extremity. Pain, temperature, tactile and position senses are all normal. A diminution of the vibration sense at the ankles occurred, however, in the majority of our cases. Paresthesias are absent, but the calf muscles are frequently tender to deep pressure during the second and third weeks. The reflexes in all our cases have been most characteristic, the knee jerks not only being present in all cases, even with thigh involvement, but the reaction being usually somewhat exaggerated. In every instance, on the contrary, the achilles jerks have been lost, as have the plantar reflexes. In cases of severe involvement of the hands, the wrist jerks have been impaired; otherwise all superficial and deep reflexes are within normal limits.

Cranial nerves are not affected and the important organs of the body show no evidence clinically of any effect of the poison. Mentally, the patients are clear throughout the course of the disease. Spinal fluid has been found to be within normal limits unless disturbed by some intercurrent disease.

The attack of the poison is specifically on the peripheral nerve ends. This was well shown by several cases which demonstrated atrophic interossei giving a reaction of degeneration in both hands in the distal or radial two fingers, whereas the little and ring fingers, more proximately supplied by the ulnar nerve, were normal in use and reaction.

The severity of the poisoning is always plainly marked by the extent of involvement of the upper extremity. In the mildest cases only toe drop occurs. In the moderately severe there is also weakness of the hands with rather early recovery. In all severe cases, wrist drop is complete and the intrinsic hand muscles are atrophic. The muscles paralyzed are those supplied by the terminal branches of the ulnar or median nerves. The thenar and hypothenar eminences especially suffer, and there is wasting between the metacarpal bones.

Recovery from the paralysis takes place in the muscle groups in exactly the reverse order of its appearance; i. e., the recovery begins in the extensors of the forearm and in about five months after the onset the wrist drop has recovered. Next, the interossei situated toward the ulnar side regain their tone in about eight to ten months after the onset. Gradually, the radial interossei and the pollicis muscles begin to function and, except in the severest cases, have practically recovered in from twelve to fourteen months.

In the legs, the thighs are first to recover since they are only partially affected, even in severe cases. In our cases, recovery of the calf muscles had taken place

9. Smith, M. I.; Elvove, E.; Valaer, P. J.; Frazier, W. H., and Mallory, G. E.: Pub. Health Rep. **45**: 1703 (July 25) 1930. Smith, M. I.; Elvove, E., and Frazier, W. H.: Pub. Health Rep. **45**: 2509 (Oct. 17) 1930.

in fourteen months except in the severest cases, and, at about this period, the anterior tibial group was just beginning to function sufficiently to raise the toes weakly. In the severest cases there was still no muscular activity below the knee even at fourteen months. In these severe bedridden cases the feet are cold and cyanotic and some of the patients have moderate edema of the ankles. Their response to vibration sensation is still diminished and the muscles involved make very slight or no response to even a galvanic current.

The economic loss from this poisoning epidemic may be worthy of consideration. Based on the number of patients practically totally disabled for an average of two years and taking account of the cost of hospital and nursing care added to the loss of usual compensation, a conservative estimate of the damage would reach upward of $50,000,000.

The work of Smith and his assistants on the effect of 1930 ginger extract on animals has been thorough and its results most illuminating. The resistance of the usual laboratory animals to this poison tended to delay

Fig. 1.—Atrophy of intrinsic muscles of hands.

the proof that tricresyl phosphate was the adulterant causing the paralysis. The persistence of the investigators was rewarded, however, when they found that calves became paralyzed in the same manner as man. Subsequently, Smith reported that chickens reacted identically with human beings, and by administering to groups of these birds variable doses of the poison it was possible to develop either mild or severe paralysis in certain lengths of time. In this connection it is of interest to note that milder doses of the poison produced only paralysis of the lower extremities in from twelve to fifteen days, while larger doses paralyzed also the upper extremities in from ten to fourteen days.

These observations corresponded closely to my clinical experience in the onset and severity of the cases.

The excuses offered by the patients to account for their paralyses were variable and often far-fetched. Among those employed, however, there was a definite tendency to shift the blame toward the industry in which they were engaged. Complaints against damp, wet or cold floors on which they stood were made. Also, the blame was put on ladders or exposed staging, with frequent denial that possible harm could have come from what little they drank.

There was at first a tendency for the industrial accident board in Massachusetts to award compensation on the history given, until it was pointed out that the clean cut symptom complex of this polyneuritis need not be mistaken for such diseases as lead poisoning and occupation neuritis. In fact, it is my opinion that there is no disease, old or new, whose symptomatology was more identical in each case of equal severity whether the case appeared in the North, South or West of the United States. This pure symptomatology made it unnecessary for experienced examiners to waste much time listening to denials that the victim had taken jamaica ginger, provided the onset was timely in 1930.

REPORT OF A TYPICAL SEVERE CASE

J. F., a man, aged 44, white, single, a lineman for a power company, was admitted to the Worcester City Hospital, April 12, 1930.

The past and family history was not significant. In recent years "moonshine" had been used to excess at intervals, though his occupation was followed fairly regularly.

The patient stated that in order to taper off from one of these drinking intervals in the latter part of March he took two 2 ounce bottles of N....'s jamaica ginger, diluted with soft drinks, for one week. There was no complaint of gastrointestinal disturbance at the time, but about two weeks later a toe drop had developed to such an extent that walking was rather difficult. Within a few days he was entirely unable to get about. Nine days after the onset, double wrist drop developed and the hands became so weak that he could not feed himself.

Physical examination at the hospital disclosed a motor paralysis in both legs to the midthigh and extensive paralysis of the intrinsic muscles of both hands and extensors of the forearms. There was considerable sweating of all four extremities. All sensory reactions were normal except that the vibratory sensation was considerably diminished in the legs. The chest and abdomen were normal. In spite of the paralysis high in the thigh muscles, knee jerks were active. The achilles jerks and plantar reflexes were, however, abolished. The wrist jerk was diminished, with all other reflexes, within normal limits. The fundus was clear and all cranial nerves were intact. There was no marked muscular incoordination. The blood pressure was 150 systolic and 90 diastolic.

Laboratory observations disclosed normal urine, a normal blood picture, and no increased white count. The spinal fluid gave a normal colloidal gold reaction and negative Wassermann, Hinton and Kahn reactions. The cell count was 3; total protein, 35; chlorides, 620; sugar, 0.06 per cent; globulin, 1 plus.

For treatment, the paralyzed parts were put in a favorable position and, later, massage and muscle training were carried out. Reaction of degeneration was found in all affected muscles one month after the onset. Progress was exceedingly slow in this severe case, but after seven months the wrist drop showed recovery and the patient was beginning to regain some power in the hands and thighs. At ten months, though practically bedridden, the patient was put in a wheelchair part of the time.

Examination at this time disclosed the head, neck and chest normal; also, the upper arms. There was moderate atrophy of the forearm muscles, particularly toward the wrist. Motion was possible in all forearm muscles, but extensors and supinators were weaker than flexors and pronators. Both hands had a tendency to assume a claw position with complete atrophy of interossei and all the muscles of the thenar and hypothenar eminences. Flexion of the fingers was fairly strong. All thumb motions were markedly impaired—the extensor longus and brevis alone were reactive. The hands were rather cold, moderately cyanotic and with skin atonicity. Sensation was normal. Reactions in the upper arm were normal with both currents; in the forearm, they were slightly diminished to both currents. The interossei showed total loss

to the faradic current; but the ones nearest the ulnar side showed a slow reaction to the cathode closing of the galvanic current, while the muscles of radial interossei as well as thumb muscles showed no reaction. Both hamstrings were stiff, with a tendency to contracture, and with moderate atrophy to about 4 inches above the knee. The thigh muscles reacted with diminished force to galvanic and faradic currents. The abdominal and back muscles were normal. All muscles of the lower leg were atrophic. There was complete toe drop. There was no voluntary motion of any muscle below the knee. The feet were cold and moderately cyanotic. The skin was rather glossy. There were no actual contractures. The dynamometer read: right hand, 20; left hand, 19.

Fig. 2.—Total paralysis below knees with toe drop.

Even after steady, slow progress in the use of the hands, there is now, at fourteen months, still marked atrophy of the intrinsic muscles of the hands (fig. 1). There is also complete paralysis below both knees and marked cyanosis with very moderate edema is present in both legs (fig. 2). In spite of his marked incapacity, this patient is now able to get into a special ambulatory apparatus (fig. 3), which allows him some exercise of the affected muscles.

LABORATORY TESTS

In order to test possible reaction from the etiologic agent, the following tests were done on twenty patients with polyneuritis: white and red blood counts, hemoglobin determination, Schilling differential count, search for stippling, reticulocyte count, sedimentation rate, Wassermann reaction, Hinton reaction, Kahn reaction and routine urine.

From all these tests no abnormal pathologic condition was found, the only significance changes occurring in two patients who had a complicating syphilis which gave characteristic reactions.

PROGNOSIS

Since this paralysis is a new entity, one naturally takes a guarded position in laying down the prognosis. Were one asked to prognosticate the result of a forest fire then in progress, similar powers would be called on. The simile may be carried further to observe that where the fire tarries long and burns deep there will be waste; where it touches lightly the green shoots appear the coming year.

It may now be stated that in all mild cases full recovery should occur within fifteen months. In the moderately severe cases with impairment of the hands, recovery should occur within two years. In the severest cases, even though the hands show great improvement, complete paralysis still exists below the knee. I believe there will be remarkable improvement gradually, even in these cases, but many of them may be expected to stop short of a complete recovery.

TREATMENT

Since the paralytic stage which brings the patient under observation occurs several days after ingestion of the poison, and after its probable elimination from the kidneys, there is little chance of antidotal treatment.

Practically, it is a matter of after-care. The paralyzed limbs should be supported in a favorable position of rest and warmth. Later, massage, muscle training and mild galvanism of the affected muscles is indicated.

I have been disinclined to use heavy splints but have arranged various mechanical devices to attempt to overcome the disastrous defects of locomotion and station. An ambulatory wooden cage on small trucks, which the patient could enter and push while astride a leather saddle, gave exercise for the legs. A stationary bicycle with enlarged foot-rests was also employed by patients after the bedridden stage had been passed. Special devices to improve the tone of the intrinsic muscles of the hands were also employed.

Fig. 3.—Ambulatory apparatus for use in severe cases.

DIAGNOSIS

This clinical entity is unusually clean cut and adaptable to a differential diagnosis and it may be of value to mention briefly some of the conditions to be differentiated. First to be considered are other forms of polyneuritis, it being understood at once that a mononeuritis arises from local causes and should not be confusing.

Alcohol was formerly the cause of a more common form of polyneuritis coming on slowly with marked sensory changes and painful conditions affecting especially the feet. The general symptoms of chronic alcoholism are usually present and not infrequently marked mental symptoms occur, as in Korsakoff's syndrome.

Lead poisoning also is slow in onset, usually accompanied by constipation, colic and severe anemia. The lead line appears on the teeth and stippling in the blood. The palsy is selective, especially in the muscles of the forearms, whereas the present polyneuritis invariably appears first in the lower extremities.

Polyneuritis from arsenic occurs only in chronic cases with slow onset, respiratory disturbances and marked sensory symptoms. Sweating and later pigmentation with skin eruptions are the rule. In some cases, blindness has occurred.

Carbon monoxide, carbon bisulphide, phosphorus, mercury and other metals may rarely cause polyneuritis, but none of them cause the pure type of motor paralysis present in these cases.

Beriberi is endemic in certain countries. The polyneuritis is accompanied by a polymyositis. Sensory disturbances, pain, paresthesia, nerve trunk sensitiveness and hypesthesia are present. Tendon reflexes are at first increased, later abolished. There is marked involvement of the heart and vascular systems. Edema even of the face may be extreme.

Infectious diseases, diphtheria and influenza, particularly, may be complicated by palsies or even polyneuritis, but the distribution of the palsy and the presence of initial fever should fix the differential diagnosis.

Other neurologic diseases to be differentiated are tabes dorsalis, multiple sclerosis, combined system disease of the spinal cord, occupational neuritis of severe type, transverse myelitis and anterior poliomyelitis.

Tabes dorsalis is a posterior tract spinal cord disease causing lost knee jerk and ataxia without typical toe-drop of sudden onset. Physical signs often affect the cranial nerves. Frequently gastric crises and nerve root pains occur. Tests for pathologic conditions of the spinal fluid are positive, especially the Wassermann and colloidal gold tests.

Multiple sclerosis is typically a spastic paraplegia of slow onset in young people without bilateral toe-drop and ataxic gait. Further symptoms to be observed are intention tremor, scanning speech, pale temporal disks, absent abdominal reflexes and lively lower reflexes.

Combined system disease of the spinal cord occurs chiefly in pernicious anemia. The condition here is a lateral and posterior tract lesion, not a peripheral neuritis. Sensory changes are always present rather than rapid toe-drop, the muscular weakness is more generalized, and anemia with a more or less typical blood picture may be found.

Occupational neuritis of severe type may cause considerable weakness in the extremities but it is rarely bilateral and is accompanied by sensory disturbances and painful reactions to use or pressure, and the muscles do not typically give a reaction of degeneration.

Transverse myelitis will of course cause a bilateral paraplegia of rapid onset, but the sensory loss is usually as complete as the motor; the sphincters are involved and the knee jerks suffer as well as the ankle jerks.

Anterior poliomyelitis might mislead one if the paraplegic type were present, but a more complete examination would show the knee jerk lost and some spinal fluid changes early. The paralysis in these cases is usually irregular or crossed, not resembling a peripheral type. Moreover, the usual age of incidence and the prodomal pyrexia are distinct from polyneuritis.

PATHOLOGY [10]

Of the sixty-four patients admitted to the Worcester City Hospital, four died of other causes and were examined post mortem. Three died eight weeks after and one died a year after the onset of paralysis. In view of the clinical signs that the patients presented, the pathologic changes were sought in the nerves supplying the paralyzed muscles, also in the spinal cord, medulla and pons. To this end the following tissues were secured and placed in a 10 per cent solution of formaldehyde: spinal cord, medulla and pons, and sections of the radial, anterior tibial, external popliteal and sciatic nerves. The posterior tibial was also secured in two cases. There was no gross pathologic condition in the spinal cords or peripheral nerves.

The peripheral nerves and several of the lower anterior roots of one spinal cord were prepared by cutting in the longitudinal axis with the freezing microtome at 10 microns. These were stained by the Bielschowsky method to demonstrate axis cylinders, by the Spielmeyer method to demonstrate myelin sheaths, and by sudan III to demonstrate free fat. Several sections from various levels of the cords, the medulla and pons were also stained with sudan III.

Microscopic Observations.—Spielmeyer Method for Myelin Sheaths: The peripheral nerves, namely, the radial, anterior tibial, external popliteal and sciatic nerves, showed focal degeneration of the myelin sheaths (fig. 4). It is true that the myelin sheaths of all axis

Fig. 4.—External popliteal nerve showing extensive myelin sheath degeneration; Spielmeyer stain; slightly reduced from a photomicrograph with a magnification of 400 diameters.

cylinders were not injured, nor did the degeneration necessarily extend throughout the entire section. But the extent and quality of the degeneration was much more marked than one would expect to find in a normal motor nerve. In addition, the myelin sheaths outside the foci of definite degeneration did not have the clear-cut herring-bone appearance of a normal nerve. The degenerated foci themselves were characterized by a widening of the sheaths and the formation within of dark blue and black staining balls, circles and irregular fragments of myelin material. Some foci had apparently reached a greater degree of degeneration than others, as evidenced by the extent to which the myelin had broken up. It is difficult to quantitate the amount of degeneration in each nerve. Certain sections would indicate that the external popliteal was injured more than any of the other nerves. The posterior tibial nerve and the sciatic at the level of the gluteal fold showed less degeneration than any of the others. Anterior roots of the lumbar region of one of the cords showed no myelin sheath degeneration. Definite hyperplasia of the Schwann cells was not made out in any of the nerves.

10. Pathologic work under supervision of Dr. R. H. Goodale.

Bielschowsky Method for Axis Cylinders: All the peripheral nerves involved showed slight fusiform enlargements of the axis cylinders both inside and outside the foci of myelin sheath degeneration. In the foci of degeneration the axis cylinders could not always be followed throughout, owing either to a change in the horizontal plane or to complete degeneration.

Sudan III: Myelin sheaths in the course of degeneration reach the stage of neutral fat. Only a few orange colored globules of neutral fat were found in the foci of degeneration in the peripheral nerves, indicating that only a small amount of myelin at the time of autopsy had reached this stage. Sections of the spinal cords taken from various levels showed the presence of fine reddish-brown granules in the center and periphery of the cytoplasm of practically all the anterior horn cells. In some cells the nuclei were near the periphery and the nucleoli were absent, as noted with the hematoxylin and eosin stain. A few cells of the posterior horns showed similar changes. Sections of the medulla and pons of two cases showed the same changes in many of the ganglion cells, indicating different stages of degeneration. No changes were found in the nerve cells of the cerebral and cerebellar cortex in one case.

Experimental Observations: A comparison was made between the pathologic condition found in man with that found in animals given a similar mixture. The animals died soon after the onset of paralysis and had no complicating disease that might injure the nerve sheaths. Five adult rabbits were given 5 cc. each of a jamaica ginger and technical tricresyl phosphate mixture by stomach tube as described by Smith and Elvove. Three rabbits died without noticeable paralysis following daily doses of the mixture. Two rabbits received only one dose (5 cc.) and a month later they were given five more doses five days apart. They died apparently of respiratory paralysis about eight weeks after the first dose and about twenty-four hours after the onset of complete paralysis. Two control rabbits given similar doses of uncontaminated jamaica ginger did not develop paralysis and did not die. The motor nerves, spinal cord, medulla and pons from each rabbit were fixed and stained as previously described. The motor nerves from each leg of both rabbits showed focal myelin sheath degeneration, but it was not so marked or extensive as in the human nerves previously described. A sudan III stain of various levels of the cord, medulla and pons of each rabbit showed various stages of degeneration of the motor ganglion cells in all sections, as manifested by a peripheral nucleus and a finely granular reddish-brown cytoplasm.

The results of the experiment indicate that the nerve and cord changes found in the human cases were due to the poisonous agent in the jamaica ginger and not to the diseases that caused death.

CONCLUSION

The year 1930 marked the first incidence of extensive poisoning by tricresyl phosphate. In this instance the chemical appeared in an adulterant for jamaica ginger, which was distributed throughout the country, causing thousands of cases of a new type of polyneuritis.

The symptom complex is so clean cut that it may be differentiated from every other disease of the central or peripheral nervous system.

The pathology corresponds to the clinical signs showing focal myelin sheath and axis cylinder degeneration especially of the anterior tibial, external popliteal, radial and ulnar nerves. Less definite changes have also been found in the spinal cord, medulla and pons.

The prognosis should be guarded for complete recovery in severe cases in which improvement will be gradual and, in the legs, long deferred.

Treatment resolves itself into after-care of the paralysis, chiefly by exercises in muscle training.

It is to be hoped that the example of this wholesale damage, both physical and financial, may deter casual adulteration of food or drugs in the future.

ABSTRACT OF DISCUSSION

DR. ALPHONSE R. VONDERAHE, Cincinnati: Dr. Goodale sent some of the pathologic preparations to me. It has been interesting to note that the pathologic manifestations of this condition do not differ in any essential in the Cincinnati cases from those in the Worcester cases. The specimens that Dr. Goodale sent enabled me to study changes in several peripheral nerves not included in my own cases. It appears that the principal and most marked change is in the anterior tibal nerve (a degeneration perhaps in the neighborhood of 50 per cent), next in the radial nerve, then in the ulnar and medial nerves, and finally in the external popliteal nerve. The vagus usually escapes, but in one case with fatal termination it was rather severely involved. The pathologic manifestations are characterized by a central chromatolysis, which is indicative of a peripheral neuritis as the early manifestation of the condition, finally developing into an involvement of the neuron cell body itself, in some cases with actual destruction.

DR. M. I. SMITH, Washington, D. C.: Time will not permit a discussion of the experimental work that led to the identification of triorthocresyl phosphate as the direct and immediate cause of the polyneuritis. I will discuss some features of the pharmacologic action of this rather interesting substance. It acts somewhat differently in different species of animals. This feature made it difficult to secure positive proof of its etiologic relationship to the human disease. After a considerable amount of work, it became clear that the symptom complex as it occurred in man could be reproduced only in certain animal species and only on certain suitable methods of administration. Even in some of the more susceptible animals, absorption of this substance from the gastro-intestinal tract is very uncertain. My associates and I soon recognized that we were running into a peculiar and rather new type of relationship of pharmacologic action as modified by change in chemical constitution. Our studies on the toxicity of triorthocresyl phosphate in the rabbit, as compared with orthocresol and the related phenols, showed it to be from three to five times as great as that of the corresponding ortho, meta or para cresol or phenol, and many more times as toxic as some of the esters that are closely related chemically, such as the phosphoric esters of metacresol or paracresol, and the acetic, benzoic or phthalic esters of orthocresol. Our experiments have also shown definitely that of the several isomers mentioned, only the phosphoric ester of orthocresol exhibits the specific action on the neuromuscular apparatus, resulting in flaccid paralysis, more especially of the posterior extremities. In order to get some understanding of this specificity of the phosphoric acid ester of orthocresol, we have attempted to find out what happens to this compound in the animal body. The phenols, as is well known, are detoxified by conjugation with glycuronic and sulphuric acids, and are eliminated largely in this combination. We have attempted to ascertain the rate of hydrolysis of some of these esters in the animal body and have used the urinary phenol excretion in cats as an index of it. In brief, we have found that the phosphoric esters of ortho, meta and para cresol do not appear to undergo hydrolysis in the animal body, while some of the organic esters of the cresols that we have examined appear to hydrolyze with great rapidity. The effects produced by the latter compounds can be accounted for by the phenols set free following their cleavage. Our data are, however, as yet inadequate to account for the specific action of the phosphoric ester of orthocresol as distinguished from the related meta and para isomers. There must be a subtle mechanism in the animal body for handling

these closely related chemical compounds, and more pharmacologic work will be needed to elucidate the mechanism of its action.

DR. CHARLES E. KIELY, Cincinnati: The epidemic in Cincinnati was a large one; 316 cases went into our service in the Cincinnati General Hospital, and there were a good many cases in the outpatient departments and in other hospitals; 500 for the county would probably be a conservative estimate. Our experience differs in some slight respects from that which has been reported from Worcester. There is a rather definite correlation between the length of the incubation period; i. e., the time between the ingestion of the poison and the onset of symptoms. The shorter the period, the more severe the paralysis. We are not able to ascertain any correlation between the amount consumed and the severity of the paralysis. The reason is, we believe, that in certain persons a small dose will produce an extensive paralysis. We have two well authenticated cases: One of the two patients had never tasted jamaica ginger in his life but, being advised to take some "jake" when he was suffering from a stomachache, he sent a Negro porter out to get some, and they split a bottle, drinking approximately 7 drachms (26 cc.) apiece; both were sufficiently paralyzed to be on an inpatient service. If 7 drachms of this beverage produced so extensive a paralysis, it is going to be impossible to get any correlation with the really old hands who consumed twenty-five bottles. Our experience differs from that of the author in the gastro-intestinal symptoms, because 62 per cent of our patients had either vomiting or diarrhea, even with bloody stools. The city council passed an ordinance that no jamaica ginger of any kind could be sold except on prescription, and the publicity given by the newspapers had a great deal to do with bringing the epidemic to an end. Only three patients were women. I believe that is due to the fact that women don't care for a strong drink of this kind. I was glad to hear the economic question taken up, because it created a tremendously serious situation for our hospital: a hospital with a normal capacity, supposedly a maximum of 800, had almost 1,000 cases as a result of this epidemic. And let me say that as soon as possible a great many patients were hurried out to an improvised infirmary, and every effort was made to get them out as soon as the least sign of improvement was found.

DR. EMIL BOGEN, Olive View, Calif.: It is evident that the term "1930 type of polyneuritis" is applicable to this disease, but one must not be deluded into the feeling that the disease terminated in 1930. We have had 150 cases in California, all in the year 1931, and no one knows where the condition will present itself the next time. The amount of paralysis found in patients was not exactly proportional to the dose of the material taken. It is fairly difficult to find out exactly how much of the jamaica ginger the patient has been drinking, and it is also difficult to know how much of the jamaica ginger of a particular adulterated lot he has had. Nevertheless, in going over the records of 100 patients at the Los Angeles General Hospital, it was found that those patients who showed the greater amount of paralysis reported, on the average, a larger amount of intake of jamaica ginger. In no case was there an instance of a patient showing the paralysis who did not give a history of having drunk jamaica ginger; on the other hand, there were a number of instances in which persons had imbibed liquor from the same lot and yet did not show any signs of paralysis. Just what the incidence of this resistance to paralysis is, we have no idea, since we have no idea how many drank this adulterated material. We have attempted to note the effect of triorthocresyl phosphate on guinea-pigs and rabbits, and found that the lethal dose was, as Dr. Smith reports, around 100 mg. per kilogram, but we also have not been able to produce a typical form of paralysis in these animals.

Pellagra.—A scrutiny of the literature published during the last thirty years reveals the prominence of the theory that a deficient diet is the cause of pellagra (which is an outgrowth of the conception that the disease comes from the consumption of spoiled maize). The theory that pellagra is caused by a deficient diet has advanced recently to the theory that a deficiency of "vitamin G" is the cause.—Thatcher, H. S.: Pellagra, *Arch. Path.* **12**:982 (Dec.) 1931.

PSEUDOPREGNANCY

DONALD MACOMBER, M.D.
BOSTON

The term "pseudopregnancy" in man, or pseudocyesis as it is called in the textbooks, is reserved for the condition of imaginary pregnancy. In animals, however, the term is used with a very different connotation. The typical condition can best be described from what occurs with the rabbit. In that animal ovulation occurs ten hours after coitus. Under normal conditions, fertilization and normal pregnancy follow. If, however, ovulation follows sterile coitus (that is, when the buck has had both vasa tied off) it is followed by a condition of pseudopregnancy which lasts from sixteen to nineteen days, as compared with the normal pregnancy of thirty-one to thirty-two days. During this period there are mammary gland changes and at its culmination actual milk is secreted. A nest is often made and fur plucked out to line it. The mucosa of the uterus shows great glandular proliferation; and the corpus luteum formed after ovulation is in its early stages, before it begins to shrink at the end of pseudopregnancy, indistinguishable from the true corpus luteum of normal pregnancy.

Fig. 1. (case 1).—Section of tissue; reduced from a photomicrograph with a magnification of 60 diameters.

Estrus and pseudopregnancy in the ferret as reported by Hammond and Marshall [1] are similar to these conditions in the rabbit, the only difference in the two species being that the hypertrophy of the gland tissue of the uterus which is formed in pseudopregnancy is absorbed in the rabbit and desquamated in the ferret. In both these animals the cellular hypertrophy resembles decidual formation.

In the bitch, ovulation occurs independently of coitus and if fertilization does not take place is followed in every instance by pseudopregnancy. In the rat and mouse, ovulation also occurs independently of coitus but pseudopregnancy follows only if there has been sterile coitus. Long and Evans [2] have described a

1. Hammond, J., and Marshall, F. H. A.: Estrus and Pseudopregnancy in the Ferret, Proc. Roy. Soc. s. B., London **105**: 607 (Jan. 2) 1930.
2. Long, J. A., and Evans, H. M.: The Estrus Cycle in the Rat and Its Associated Phenomena, Berkeley, Memoirs Univ. of California **6**, 1922.

method by which stimulation of the cervical canal by a glass rod brings about a condition with demonstrable changes in the vaginal mucous membrane simulating pregnancy. This condition lasts twelve or thirteen days, the normal interval between periods of estrus being from four to five days and the normal length of pregnancy twenty-one. During this time corpora lutea resemble those of pregnancy. If during the pseudo-

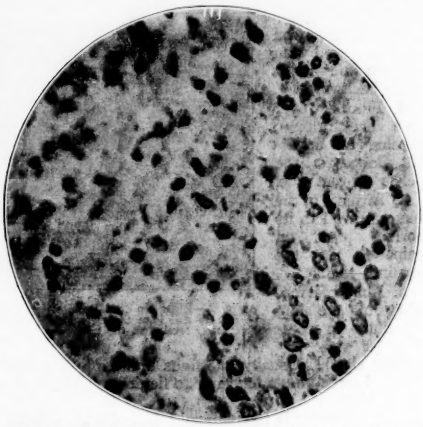

Fig. 2 (case 1).—Section of tissue; reduced from a photomicrograph with a magnification of 240 diameters.

pregnancy thus produced by artificial stimulation of the cervix they traumatized the uterus by passing a sterile silk suture through it, deciduomas were formed provided the operation was done four days from the time of stimulation. Some time previous to this, Leo Loeb [3] had reported the formation of deciduomas in the uterus of the guinea-pig following traumatization.

Quite recently numerous experimenters, beginning with the work of Heape, Marshall and many others, and culminating in the work of Corner, Hartman [4] and others, have been working on the problem of menstruation. They have attempted to correlate the menstrual cycle with the sexual cycle as seen in lower animals. The consensus seems to be that ovulation occurs spontaneously in the midmenstrual period and is followed during the growth of the corpus luteum by a period of pseudopregnancy (unless, of course, true pregnancy has followed fertilization). The beginning degeneration of the corpus luteum marks the end of pseudopregnancy as it does in animals, and this is followed by the bleeding of menstruation.

Decidua is normally formed in the pregnant uterus under the stimulation of the embryo. The experiments just quoted show that it can be formed in the pseudopregnant uterus under the stimulus of trauma. In man the occurrence of true deciduoma in pseudopregnancy has never been reported, at least as far as I am aware. It is my purpose in this paper to report two such cases.

CASE 1.—A woman, aged 37, married ten years, with negative history and normal physical examination, says that on April 3, 1930, she passed a small amount of tissue, having been eleven days over her menstrual period. A pathologic report stated that there was endometrial tissue containing markedly hyperplastic glandular structures, all of which were lined with normal epithelium. The surrounding stroma contained numerous large cells which had the appearance of decidual cells. No chorionic villi were found (figs. 1 and 2). The husband had absolute aspermia following double epididymitis.

CASE 2.—A woman, aged 27, married two years, gave an unimportant history except that menstruation had always been slightly irregular; she had never skipped a period. On four occasions since her marriage she had passed something after being two weeks overdue. The first two times were May and September, 1930. November 12, she had a simple suspension by another surgeon. November 30, being again two weeks overdue, the patient again passed a small amount of tissue, which was submitted to pathologic examination. The report showed well formed decidua but no chorionic villi (fig. 3). Finally, after again being two weeks overdue the patient passed a small amount of tissue, Jan. 14, 1931. There was no evidence of decidua and the specimen consisted only of congested endometrium. In this case also the husband has been examined and while not absolutely sterile, as in case 1, his fertility was so extremely low as to make pregnancy practically an impossibility.

COMMENT

In both these cases there is evidence of decidua formation when the stimulus of an embryo was not present. In both cases menstruation was delayed and it would seem that there had been a condition of pseudopregnancy comparable to what occurs in the rabbit and ferret after sterile coitus. In the second case it seems fairly obvious that the decidua was formed as a result of the trauma of operation. The actual determining cause in the first case is unknown.[5] The occurrence, however, in either case offers considerable support to the theory that pseudopregnancy occurs regularly in the human female preceding menstruation. This would be

Fig. 3 (case 2).—Section of tissue; reduced from a photomicrograph with a magnification of 240 diameters.

somewhat analogous to the pseudopregnancy of the bitch. It has been suggested by several writers, notably Oliver,[6] that while ovulation often occurs spontaneously

3. Loeb, Leo: Corpus Luteum and the Periodicity in the Sexual Cycle, Science **48**: 273, 1918.

4. Hartman, C. G.: The Homology of Menstruation, J. A. M. A. **92**: 1992 (June 15) 1929.

5. It should be noted that Nelson and Pfiffner have been able to produce deciduomas in the rat by injecting extract of corpus luteum after preliminary treatment with folliculin (Nelson, W. O., and Pfiffner, J. J.: Experimental Production of Deciduomata in the Rat by Extract of Corpus Luteum, Proc. Soc. Exper. Biol. & Med. **27**: 863 [May] 1930).

6. Oliver: A Study of Fertilization. Edinburgh M. J. **54**: 1902, as quoted in Marshall, F. H. A.: The Physiology of Reproduction, ed. 2, London, Longmans, Green & Co., 1922, p. 133.

it is more than probable that it may be, and often is, accelerated by coitus. If this is true, reproduction in man would be similar to that in the rabbit and a condition of pseudopregnancy might follow sterile coitus, as it apparently did in case 1. It is doubtful whether these are isolated or unusual occurrences except so far as both males happen to be sterile. It is more than probable that they represent a frequent occurrence and that it is only because early specimens of this sort are rarely examined that more have not been reported.

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TREATMENT IN INFANCY OF CONGENITAL DISLOCATION OF THE HIP*

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Congenital dislocation of the hip is sufficiently frequent to present a problem worthy of earnest study. Bruce[1] says: "A heritage of developmental error or deficiency with its train of unhappiness commands the close attention of all medical men." It constitutes the most frequent of all congenital deformities, occurring four times as often as clubfoot and twelve times as often as torticollis.

But since it presents no striking deformity at birth, it is not recognized until the age of 2 or 3, when the child begins to walk and a slight limp is apparent. By that time serious developmental changes and deformities have occurred in the socket and femoral head and neck, which make a perfect cure difficult, if not impossible.

Fig. 1.—Shortening and outward rotation of affected leg.

Beginning as a slight subluxation, it could be replaced with ease and certainty if the diagnosis were only made.

The importance of early diagnosis cannot be overemphasized. As part of the routine examination of every infant, the hips should be carefully observed and watched for this abnormality. The signs are clear and definite, and any suspicion as to its presence warrants the taking of a roentgenogram to confirm it.

DIAGNOSIS

The signs in single cases are as follows:

1. Habitual outward rotation of one leg.

2. Shortening of the affected leg. This is often seen by inspection or ascertained by comparative measurement. Another test for shortening is to lay the child on a hard smooth table and (*a*) flex both hip joints to 90 degrees, and with the knees flexed, the knee of the affected leg will then be at a lower level (fig. 2); (*b*) with the hip flexed as in figure 2, and the knees fully extended the shortening, which was apparent with the legs extended, becomes more marked; (*c*) there is, in addition, tension of the tuberocrural muscles and an absence of resistance backward.

Fig. 2.—Right hip dislocated. On flexion of the hip and knee the right knee is seen at a lower level than the left.

3. Fulness over the trochanter, causing an apparent widening of the pelvis on that side.

4. Absence of the femoral head in its normal place on palpation in the inguinal region.

5. Abnormal mobility of the hip, especially in rotation (a very important sign). Usually one finds limitation of abduction and sometimes a tendency to flexion of the affected hip or hips.

6. A difference in the inguinal folds. On the affected side the angle is changed, being more vertical, and the inferior end is higher than on the normal side. The vulva is drawn to the affected side (fig. 3).

7. The same changes in the gluteal folds (fig. 4).

8. A sort of crackling or click, which occurs when the legs are moved.

The diagnosis is verified by the roentgenograms.

The signs in bilateral cases are as follows:

1. There is a habitual outward rotation on both legs.
2. The pelvis is comparatively wide.
3. The tests for shortening, inguinal and gluteal folds, are of no help.
4. The trochanters will be found above Nélaton's line.

The diagnosis is verified by the roentgenogram.

In all cases a routine examination of the trochanter in its relation to Nélaton's line should be made.

In taking the history, it might be well to inquire into details of labor, whether it was long or difficult or a breech presentation.

ROENTGEN DIAGNOSIS

The femur is at a higher level and at a greater distance from the socket as compared with the normal side.

There is absence of the upper rim, making an almost straight oblique line from the acetabulum to the superior iliac margin. Ossification is delayed in the head of the affected femur. In bilateral cases, the diagnosis is frequently not made, because there is no normal hip for comparison.

TREATMENT

The treatment that I propose and have been using successfully consists in principle of four points: 1. By means of a brace the affected limb is held in marked abduction, a position which favors a return of the head

* Read before the Section on Diseases of Children at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Bruce, John: A Reconsideration of Congenital Dislocation of the Hip in Childhood, Practitioner **125**: 642 (Nov.) 1930.

into the socket. 2. By means of an adjustable pad a gentle pressure is applied downward and inward on the trochanter. As a result, after four weeks the head is in the desired position, and no additional pressure is needed. 3. No standing or walking is permitted while the brace is worn. 4. The curative brace is used for about four months, when it is replaced by a convalescent splint (extending to the knee only), in which the child is allowed to walk. This is to be used for a reasonable time to permit the elongated and stretched joint structures to contract. This will hold the hip firmly in the socket, which has now been completely formed. This treatment holds good for infants who are treated during the first year of life. It is for these young children alone that this treatment is designed.

One can follow the rapid and complete development of the head and socket in the series of roentgenograms of my first case, in which the treatment was begun in the eighth month. The last roentgenogram was taken more than six years after the end of treatment. It shows normal physiologic development of the socket and the femoral head and neck. Such a perfect result would hardly have been possible if the child had been subjected to violent manipulations in efforts at forcible reduction.

Although I consider treatment in the first year the most favorable period, nevertheless satisfactory results were obtained in cases 2, 3 and 4. In these patients the respective ages were 2 years 7 months, 1 year 2 months and 1 year 8 months, at the beginning of the treatment.

Fig. 3.—Right inguinal fold and vulva drawn to the right and fulness over the right trochanter.

The underlying idea of the treatment is to begin at the earliest possible moment and to use no anesthetic, force or violence in reduction, but to direct the head slowly into the acetabulum.

The treatment in detail is as follows:

The brace employed resembles a Thomas knee brace with a footplate and leather anklet, together with an upward extension supporting two circular bands to fix the pelvis and chest. The long outer bar is bent to hold the leg in marked abduction and to maintain the neutral position of the leg; i. e., it is neither outward nor inward rotation. There is no provision for traction or extension, which I deem unnecessary.

In order to accomplish the gradual reduction of the dislocated leg, I depend on an adjustable pad controlled by a winged screw (with standard thread, 32 threads to the inch) placed directly over the trochanter. This screw is given one full turn every day, pressing the pad downward and inward, gently and slowly directing the head into the acetabulum. In one month the femoral head moves approximately 1 inch, which brings it into the desired position.

It has been deemed advisable to include both legs in braces in cases in which one hip is dislocated. This will insure perfect fixation of the affected leg. I find that children over 1 year of age are very active; they move and squirm, using the free leg to turn around, thus tending to move the trochanter of the affected leg away from the pressure pad. They lie quite still in the double brace.

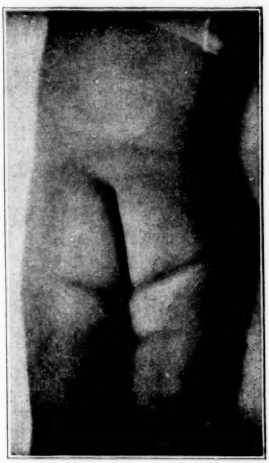

Fig. 4.—Right gluteal fold and fulness of thigh over the right trochanter as compared with the left thigh.

Bilateral cases are treated according to the same principle. An adjustable trochanter pad is applied to each dislocated hip.

In the older children I find also that the capsule is loose and that the head sometimes slips backward. To overcome this, I have added a second pad to make pressure from the rear. This adds no particular discomfort to the patient and assures the head being directed properly.

These objections were not present in my first patient, who was only 7 months old when treatment began. This child was perfectly quiet and did not attempt to move about in the brace, as the older children did.

The series of roentgenograms shows that, as soon as the pressure of the femoral head on the upper acetabular rim was removed, the roof of the socket began to develop. This is well illustrated in the series of tracings of case 3 (fig. 5). These show the head in the socket within four weeks and the perfect physiologic development going on to the completion of the normal hip joint.

The treatment with the brace permits of easy and cleanly sanitary care. It also gives free access to the hip joint for manual and roentgen examination. The position of the femoral head is always demonstrable. It overcomes the chief objection to the plaster-of-paris retention cast; namely, the soiling and early softening of the cast, which necessitates frequent renewals, and the danger of redislocation. This has been one of the chief reasons for postponing the treatment until the child has reached the age of 3 or more years, when chances for cure are rapidly diminishing.

REPORT OF CASES

CASE 1.—J. R., a girl, referred at the age of 3½ months to me for treatment by Dr. F. Elmer Johnson, who made the diagnosis, was a very delicate child; hence treatment was not begun until the age of 7 months. A brace was applied and worn for eight months. The pressure was made very gradually

with great caution. A roentgen examination at the end of four weeks showed definitely the beginning development of the upper rim of the socket. Roentgenograms taken four years and six years after the conclusion of treatment show two normal acetabula, so completely alike that it is impossible to tell which hip was dislocated. Figure 6 illustrates the remodeling of the hip joint during treatment.

CASE 2.—L. A., a girl, whose mother noticed a limp when the child began to walk at the age of 13 months, was treated by another physician without manipulation or reduction, by a

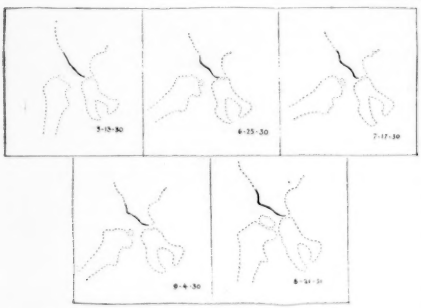

Fig. 5 (case 3).—Tracings made from roentgenograms, showing total absence of acetabulum before treatment and the progressive development of the acetabulum during and after end of treatment.

series of plaster-of-paris casts in various positions of the leg. A brace with extension was then applied. The child was allowed to walk during the entire time of treatment. At the end of a year or more a roentgen examination showed that the head was not in the socket. With traction on the leg, the head could be brought down to the level of the acetabulum, but it was separated a goodly distance from it.

An operation, including bone transplantation, was advised but declined. The child, then 2 years and 7 months of age, came under my care. A brace, similar to the one used in the first case, was applied. This time the screw pressure was applied to the trochanter more rapidly, and within five weeks the dislocated head was in the socket. At this early period one sees on the roentgenogram the beginning development of the upper rim. The brace was worn a little over four months. Then a short convalescent splint was applied. The child was not allowed to walk while wearing the curative brace.

CASE 3.—J. B., a well developed girl, aged 13 months, referred to me by Dr. John S. Ware, had shortening of the right leg, which was the first symptom noticed by the mother. The mother also noticed that the right patella was higher than the left, and that when the child began to stand, the right heel was elevated and resisted efforts by the mother to draw the heel down. The patient, a first and only child, of a normal labor, walked with a limp, dipping to the right side. The usual difference in inguinal and gluteal folds was present. The Trendelenburg phenomenon was present, a shortening of five-eighths inch, and abduction of the right leg was diminished. The child was treated similarly to the two preceding patients. The progress of this case is readily followed by observing the succession of roentgenograms and tracings, showing the perfect physiologic reconstruction of the socket. One sees the very early reposition of the hip in the socket and the rapid development of the upper rim of the socket.

CASE 4.—M. D., a girl, aged 1 year 8 months, was a large heavy child. The first sign of abnormality was noticed by an aunt, a practical nurse. She observed soon after birth that there was outward rotation and shortening of the right leg. The parents paid no attention to the warning of possible trouble and showed similar lack of cooperation throughout the treatment. It was the aunt, who, on her own initiative, took the 18 months old child to a physician, who failed to make the diagnosis. Some months later she consulted Dr. F. Elmer Johnson, who made the diagnosis of congenital dislocation of the right hip and referred her to me for treatment. The child walked with a typical limp and had the usual signs of dislocation. There was a shortening of five-eighths inch. The roentgenogram showed deformity of the femoral neck and acetabulum. The brace was applied, and reduction of the hip progressed favorably. The brace was frequently removed by the mother, and the child was allowed to stand. One day the head was found redislocated. This was easily reduced manually and a plaster cast applied to prevent further interference with the treatment. A fairly good socket is forming, and the child is now walking in a short convalescent splint.

In my previous article on this new treatment [2] many authors were quoted to show the general dissatisfaction with the present methods of treatment. It was admitted that the percentage of cures was much too low for a condition as common as congenital dislocation of the hip, and that methods of treatment have not come up to expectations and should be changed. A review of end-results over a period of twenty years in a large orthopedic hospital revealed more than 85 per cent of failures. Some authors admit as high as 90 per cent of failures. The reasons for this were the developmental changes taking place in all the joint structures, malformations of the acetabulum, the head, distortions of the femoral neck, elongation and constriction of the capsule. To these may be added constriction of the artery of the ligamentum teres, endangering the nutrition of the femoral head. Weight bearing on the dislocated leg increases the developmental changes, as the constant trauma of function produces marked changes in the growing epiphysis.

A case was reported in which a perfect anatomic cure had been achieved, but seven years later a roentgen examination revealed the total absorption of the head, probably the result of injuries received during the reduction.

Recognition has been slowly established of the serious danger done to the delicate structures by the force applied at the time of the manipulative reduction.

To all these early pathologic changes must be added those that come on later in life: osteochondritic and severe arthritic changes. As a result of the foregoing,

Fig. 6 (case 1).—Diagrams made from roentgenograms, showing the remodeling of the hip joint during treatment.

many surgeons now advocate open operation and reduction with or without complicated bone implantations. The end-results illustrated in published roentgenograms show badly deformed and distorted joints, complicated with osteoarthritis. These patients must necessarily suffer pain and be inconvenienced by shortening and limitation of motion.

SUMMARY

The diagnosis can be made in infancy.

Treatment should be begun during the first year of life.

The conservative treatment just described assures a physiologic reconstruction of the acetabulum. It takes

2. Jaeger, C. H.: Surg. Gynec. Obst. **50**: 757 (April) 1930.

advantage of the great urge of growth in infancy to remodel all the joint structures. The roentgenograms show how quickly and completely this is done.

It avoids the dangers of narcoses, manipulations and open operations.

The short duration of treatment prevents muscular atrophy.

This treatment, begun early and properly carried out, should result in perfect anatomic and functional cures.

1085 Park Avenue.

ABSTRACT OF DISCUSSION

DR. JAMES S. SPEED, Memphis, Tenn.: There is still a rather prevalent idea among general practitioners and even among some pediatricians that the treatment of congenital deformities such as club feet and congenital dislocation of the hip should be postponed until the child is 2 or 3 years of age. I think that the earlier congenital deformities are treated the easier they are to correct and the better the results will be. It has been customary in the past to postpone treatment of congenital dislocation of the hip until the second year of life. More recent experiences of Putti in Italy and others have shown that much better results are obtained by treatment of these hips as soon as the diagnosis is made, regardless of the child's age. I think this should be our policy at the present time. The diagnosis of congenital dislocation of the hip has been so thoroughly covered by the author that I will not go over it again. There are certain points, however, which might be of help in recognizing these cases early. There are certain groups of children in which congenital dislocation of the hip is more common and a careful examination should always be made in these cases to discover the deformity. In the first place congenital dislocation of the hip is somewhat of a geographic disease, like goiter, it being more prevalent in some locations than in others. In Italy, for instance, dislocations of the hip are more common than in this country; consequently, children of Italian parentage are more apt to be so affected. Again, congenital dislocation of the hip is definitely an hereditary deformity; children of mothers in whom the deformity has occurred in previous generations are more liable to have dislocated hips and they should all be thoroughly examined for this condition.

DR. F. ELMER JOHNSON, New York: Dr. Jaeger has put the responsibility of making diagnoses of congenital dislocation of the hip squarely on the pediatrician. From a survey of the orthopedic literature it is evident that the orthopedic surgeons are not satisfied with the end-results of their operations, particularly the closed operation. Dr. Jaeger has shown the way to better results, but he and his colleagues must be given their chance earlier. If one has witnessed the closed operation and followed the long confinement in plaster of paris and the frequent uncomfortable readjustments, one is prepared to welcome this new method. I have had the good fortune to send to Dr. Jaeger one of these cases he has reported and to watch the results of the treatment. The child was never uncomfortable and was treated so young that whatever inconvenience she suffered was of little consequence compared to that of older children in plaster who chafe under their confinement to bed. There is absolutely no traumatism or injury to the tissues with this method. The head of the bone does not have its blood supply impaired and one has every reason to believe that it will grow normally, giving a perfect functional and esthetic result. Pediatricians should have a hospital experience in orthopedic surgery. To recognize congenital dislocation of the hip early, the pediatrician must notice slight changes from the normal and have roentgenograms made for confirmation. It is difficult to make the diagnosis without roentgenograms. The important thing to know is when roentgen study is necessary. All diagnoses are difficult in the infant, and the successful diagnostician is the one who is so familiar with the normal baby's behavior and anatomic outlines that he can discern the slightest deviation from the normal. A slight rotation of the foot inward or outward, a knee held habitually flexed during examination, one leg shorter than the other, an asymmetry of the thigh and buttocks, a broadening of the thighs, a square crutch between the thighs or a preternatural rotation of the thigh on the pelvis should suggest to the pediatrician the possibility of the presence of congenital dislocation of the hip and should prompt him to have a roentgenogram made. If the baby is 6 months of age or older when the epiphysis is ossified, roentgen diagnosis is relatively easy. In my experience the signs and measurements that are so helpful in making a diagnosis in the walking child are of little or no help in the infant under the walking age.

Fig. 7 (case 3).—Before treatment.

Fig. 8 (case 3).—Four weeks after brace was applied.

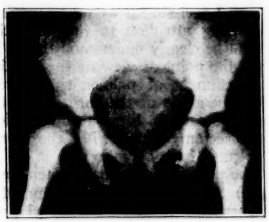

Fig. 9 (case 3).—One year after beginning treatment.

PHRENIC EXERESIS IN THE TREATMENT OF PULMONARY TUBERCULOSIS *

FRANCIS B. TRUDEAU, M.D.
SARANAC LAKE, N. Y.

For many years past, the accepted treatment for pulmonary tuberculosis has consisted of hygiene and prolonged rest, and today these well tested methods are still the main source of reliance and give satisfactory results in the great majority of cases. Anyone, however, who sees a considerable number of pulmonary patients must realize that for many of them the sanatorium routine is not enough; they require more radical treatment—some, more active assistance—to put them on the road to recovery. Of late years it has been found possible to supplement rest and hygiene by instituting various surgical measures designed to compress the diseased lung and by putting it at rest to facilitate its healing.

Probably the most satisfactory of these procedures is artificial pneumothorax, in cases in which the absence of adhesions and the presence of a fairly sound lung on the other side make its use possible; while, in the hands of a specially skilled surgeon, the more serious operation of thoracoplasty has proved a boon to a few

* Read before the Section on Pharmacology and Therapeutics at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

serious cases in which adhesions made artificial pneumothorax impracticable.

In this paper I call attention to phrenic exeresis, a comparatively simple and safe method of producing moderate compression of a diseased lung, which my associates and I are finding increasingly useful in our work at Saranac Lake.

If the phrenic nerve is interrupted in its course, the corresponding half of the diaphragm becomes paralyzed and rises in the chest, causing loss of motion and moderate compression of the lung above. This moderate compression is in many cases sufficient to close cavities, reduce temperature and expectoration and alleviate other symptoms.

It is a great boon to the physician working in pulmonary tuberculosis to have something to offer the patient and his friends when the results of rest and hygiene appear to be unsatisfactory, and if the advantages of this simple operation were generally appreciated, I feel sure it would be much more widely used. In calling attention to this operation, I feel that it should be clearly understood that it is presented purely from the point of view of the physician specializing in the treatment of pulmonary tuberculosis rather than from the angle of the surgeon, so that this paper will deal more with the indications for and results of phrenicectomy than with the surgical technic and problems of the operation.

The phrenic nerve may be temporarily blocked by:

(*a*) Simple section with immediate suture, when regeneration may be expected within four months.[1]

(*b*) Alcoholic injection as described by Goetze[2] and Huber,[3] with the expected regeneration in three months.

(*c*) Freezing with ethyl chloride with rapid return of diaphragmatic function in eight days.[4]

(*d*) Crushing of the exposed nerve, causing hemidiaphragmatic paralysis for from four to six months. The latter method has been used most commonly at Saranac Lake but for the past six months has been practically abandoned by our chief surgeon, Dr. Edward Welles, as we are all coming to the opinion that in any case demanding phrenicectomy a permanent operation should be done at once rather than later, as resort to such an operation becomes necessary in the great majority of our cases in which the crushing operation is performed. O'Brien[5] states that this occurs in over 90 per cent of his cases in which the nerve has been crushed.

The permanent operation itself, or phrenic exeresis, is done under a local anesthetic. An incision of about 1½ inches (4 cm.) is made approximately two fingerbreadths above the clavicle and parallel to it. By a blunt dissection the scalenus anticus muscle is located, running diagonally across which is the phrenic nerve. After this is freed from the surface of the muscle it is severed, the distal end being held with a hemostat. Steady traction upward is then made, causing either the entire nerve or a considerable portion of it to give way and slip out of its sheath. If approximately 12 cm. is extracted before the nerve breaks, we may feel fairly certain that all connections between the main trunk and its accessory nerve are interrupted and that the paralysis of the diaphragm will be permanent. The wound is then closed with silkworm-catgut sutures. Usually the patient is allowed to leave the hospital in a few hours. Immediate fluoroscopy will show a paralysis and a rise of an inch or more of the diaphragm on the side on which operation has been performed. As a rule, this rise continues to a slight degree for from six months to a year as the tone of the paralyzed muscle is gradually lost. Of course, the rise is less marked and is often entirely absent in the cases in which diaphragmatic adhesions are present. Cooper[6] reports no rise in the diaphragm in 38 out of 103 cases, but even in these patients the downward inspiratory muscular pull of the diaphragm is released. Most authorities agree, however, that the higher the rise the more favorable the prognosis. It is usually advisable to keep these patients in bed for at least two weeks after the operation, even though they are afebrile. After this, the operative procedure has little influence on the general course of treatment.

TYPE OF CASE MOST SUITABLE FOR THE OPERATION

1. In the first place I feel that phrenic exeresis should be done in the great majority of cases in which artificial pneumothorax has been attempted unsuccessfully on account of the presence of adhesions. After all, the indications for these two operations are very similar and, when the former is unsuccessful, often the latter will lead to beneficial results. It has been estimated that, following the nerve evulsion, the chest capacity on this side is reduced from one sixth to one third, with resulting compression of the lung equal to that following the introduction of from 400 to 800 cc. of air into the pleural cavity.[7]

2. Another suitable subject for this operation is the patient with largely unilateral disease who, after taking the usual "cure" for six months or so, finds that, although he seems to be no worse, yet both from a symptomatic and from a roentgen standpoint he has made little or no progress. In other words, his fate is still hanging in the balance. Often in such a case the immediate paralysis of the diaphragm on the affected side will weigh the scales in his favor and enable him to round the corner and gain a good start toward recovery.

3. Many persistent cavities have been seen to disappear on the roentgenogram following phrenic exeresis. Although this does not happen nearly so frequently as with the successful administration of artificial pneumothorax, yet in certain cases it is well worth trying before submitting the patient to the length of time necessary for, or the possible complications of pneumothorax treatment. O'Brien[5] reports 378 cavity cases in which phrenic exeresis was done. In 50.5 per cent of these cases the cavities could no longer be made out on roentgen examination following operation, while in 33 per cent more they became smaller. Matz[8] reports the contraction of cavities in 27 of 100 cases in which operation was performed, while Cooper[6] reports 103 operative cases with 38 contractions of cavities.

4. So far, I have mentioned nothing about the indications for this operation from a purely symptomatic standpoint. Many reports are to be found in the literature noting a marked diminution of cough and expectoration, as well as reduction of fever and check-

1. Kroh, Fritz: Die temporäre Ausschaltung des N. phrenicus, Deutsche med. Wchnschr. **47**: 925 (Aug. 11) 1921.
2. Goetze, Otto: Temporäre Phrenikusblockade, Zentralbl. f. Chir. **47**: 29 (Jan. 10) 1920.
3. Huber, G. C.: Personal communication, July 15, 1924, cited by Alexander (footnote 10).
4. Bakes, J.: Radikaloperation der Zwerchfellhernien mittels Kirschner's "Augelhackenschnittes" und temporärer Phrenikusblockade nach Perthes-Goetze, Zentralbl. f. Chir. **48**: 554 (April 23) 1921; abstr. München. med. Wchnschr. **68**: 589, 1921.
5. O'Brien, E. J.: Tr. Nat. A. Prev. Tubere., 1931.
6. Cooper, F. B.: Am. Rev. Tuberc. **21**: 354 (March) 1930.
7. Matson, Ray: Am. Rev. Tuberc. **22**: 1 (July) 1930. Henger, Casper: Ibid. **17**: 282 (March) 1928.
8. Matz, P. B.: Am. Rev. Tuberc. **20**: 809 (Nov.) 1929.

ing of bleeding, by this simple procedure. I have had no experience with the latter, but I certainly have seen many cases symptomatically markedly improved.

5. Morgan [9] advocated the nerve operation as a safeguard for patients who are unable to receive proper care after leaving the hospital or the sanatorium. I should like to add to this group those patients who we, as physicians, know cannot or will not take proper care of themselves after they return to normal living conditions. For them, a constant although even small splint on the affected side may often prove of value.

6. Alexander [10] advocates the operation in early unilateral lesions, after a few months of sanatorium treatment have proved of no definite benefit. He feels that the percentage of permanent cures would be increased by this procedure. I myself do not think that we are yet justified in causing a permanent immediate diaphragmatic paralysis in our minimal cases, without first giving them every opportunity to heal spontaneously.

7. Many surgeons,[11] as a matter of routine, advocate operation on the phrenic nerve before doing a radical thoracoplasty, in order to test the resistance of the better lung. Also, by so doing, they hope to obtain better compression later. However, Dr. Archibald of Montreal tells me that he has had two cases in which the good lung was flared into activity by the operation, thus preventing thoracoplasty, which might have been possible had complete bed rest been substituted for phrenicectomy. He writes: "I prefer in most of them to do the phrenic operation as a final stage, months after the thoracoplasty, in such cases as do not show a thoroughly good result, and in these I have a number of very satisfactory results." In contradistinction to this view, however, one must not forget that many patients have been saved from the radical operation of rib resection by sufficient improvement following preliminary phrenic exeresis to render thoracoplasty needless.

8. The nerve operation has been used frequently in conjunction with artificial pneumothorax. This is usually done when satisfactory results are not obtained from pneumothorax treatments, because of adhesions causing insufficient or useless collapse. Goetze,[2] Baer [12] and Alexander [10] advocate that it should be done supplementary to all pneumothorax cases. The reasons given for advocating this are:

(*a*) Not so much air is needed and therefore the time between injections is lengthened (Frisch,[9] Sauerbruch [9] and Morgan [9]).

(*b*) Fewer, smaller and more quickly absorbed pleural effusions occur.[13]

(*c*) When it is decided to allow the compressed lung to reexpand, it is not necessary for it to reinflate to fill the original full-sized chest cavity, and thus the chances for opening up a healed cavity are lessened.

DANGERS

The operative dangers of phrenic exeresis are extremely slight. Bleeding from the phrenic artery or vein or from the subclavian vein has been reported. Also hemoptysis following the operation has been noted. Reflex cardiac and respiratory disturbances occur.[14] A few deaths can be found recorded in the literature as being due to air embolism. Section of the vagus nerve and also of the thoracic duct has been done through error. These, however, are rare occurrences and I feel that the operation may be considered practically without risk.

For a short time, following the removal of the nerve, one may expect increased cough and expectoration in a certain number of cases, owing to a slight compression of the lung. Gastric disturbances also sometimes occur, especially after operations on the left side, resulting, undoubtedly, from altered pressure conditions. These disturbances may last for a week or even up to several months but nearly always clear up eventually. Of course, the side on which operation was not performed must be carefully watched, as several cases have been reported in which the disease has either spread to or caused reactivation on this side. It must be remembered, however, that this is also occasionally true in pneumothorax cases, as well as in cases in which nothing is done.

RESULTS

After all, the most interesting question about the surgical procedure under discussion is what the results show. First speaking locally, as it were, for the majority of our cases in Saranac Lake, Dr. Welles [15] reported a little over a year ago the results of 300 nerve operations and stated that beneficial results were obtained in approximately two thirds of these cases. Dr. Powers at Stony Wold Sanatorium reported at our local medical society last winter fifty cases, with 72 per cent of improvements. Bridge and Bly [16] at Iola Sanatorium obtained improvement in 62 per cent of their cases reported. In 25 per cent of their previously positive sputum cases the sputum became negative following operation. Matz [8] states that in 100 cases in which the operation was performed in all stages, 48 per cent were improved. O'Brien [5] in his series of cases previously referred to, states that 52 per cent of the positive sputum cases became negative. Matson [7] obtained this result in 42 per cent of his sixty-six cases reported, while in only 2 per cent of cases did he feel that the patients became worse following operation. This is the same figure as that reported by Welles [15] at Saranac on his 300 cases, showing that, although one cannot always expect benefit from the operation, yet the dangers of actual harm are slight.

Before closing, may I refer any one further interested in this subject or in surgery of the chest in general to Dr. John Alexander's excellent book "Surgery of Pulmonary Tuberculosis," which was awarded the Gross Prize by the Philadelphia Academy of Surgery.

CONCLUSIONS

1. A sufficient number of cases of phrenic exeresis have been reported to date to warrant the statement that this operation has earned for itself a definite place in phthisiotherapy.

2. The indications for its use are found largely in unilateral cases, in patients who do not respond well after several months of usual bed rest treatment, or

9. Tr. Nat. A. Prev. Tuberc., 1930.
10. Alexander, John: The Surgery of Pulmonary Tuberculosis, Philadelphia, Lea & Febiger, 1924.
11. Matson (footnote 7). Matz (footnote 8). Morgan (footnote 9).
12. Baer, Gustav: Ueber die Indikationen zur chirurgischen Behandlung der Lungentuberkulose, Klin. Wchnschr. **2:** 1581 (Aug. 20) 1923.
13. Sauerbruch, F.: Kritische Bemerkungen zur Behandlung von Lungenerkrankungen durch kunstliche Lähmung des Zwerchfelles, München. med. Wchnschr. **70:** 693 (June 1) 1923. Zadek, I.: Zur kombinierten chirurgischen Behandlung der Lungentuberkulose: Phrenikusexairese und Pneumothorax, Med. Klin. **19:** 1014 (July 22) 1923.
14. Alexander, Hans: Ueber die Bedeutung der Phrenikusausschaltung; insbesondere in Form der Exairese fur die Behandlung der Lungentuberkulose, Ztschr. f. Tuberk. **30:** 325 (July) 1922. Zadek (footnote 13). Felix, Willy: Anatomische, experimentelle und klinische Untersuchungen über den Phrenikus und über die Zwerchfellinnervation, Deutsche Ztschr. f. Chir. **171:** 283, 1922.
15. Welles, E. S.: Phrenicectomy in Three Hundred Cases of Pulmonary Tuberculosis, Arch. Surg. **19:** 1169 (Dec., pt. 2) 1929.
16. Bridge, Ezra; and Bly, P. A.: Am. Rev. Tuberc. **20:** 685 (Nov.) 1929.

who have persistent open cavities with positive sputum, or constant cough and expectoration as prominent symptoms. It is further indicated as a safeguard for those who cannot or will not receive proper treatment after leaving the sanatorium; also in the great majority of cases in which pneumothorax has been tried without success, as well as an adjunct for many pneumothorax cases, and, lastly, either preceding or following thoracoplasty, to insure a more perfect collapse.

3. The operative dangers and complications are so rare that they may be absolutely disregarded.

4. The results seem to show that some benefits are derived in more than half at least of the cases in which it is tried. Although one does not often see the miracles following the use of phrenicectomy that so frequently occur in many cases of artificial pneumothorax, yet in many cases it has stemmed the tide and led to the road to recovery.

105 Main Street.

ABSTRACT OF DISCUSSION

DR. RUSSELL M. WILDER, Chicago: I should like to ask Dr. Trudeau what the present-day views are as to bilateral phrenic exeresis. I understand that this method of treatment has been used abroad. I don't know whether anybody in this country has used it.

DR. FRANCIS B. TRUDEAU, Saranac Lake, N. Y.: It has been used somewhat in this country. We have not used it yet at Saranac. We are a little scared of it. O'Brien in Detroit, as I mentioned, has probably done more phrenicectomies than anybody I know, either abroad or in this country. He is now on his third thousand. He has done over 2,000 so far and he is just starting to perform the operation bilaterally. When I met him in Syracuse, he said he hadn't done sufficient to express an opinion concerning its value.

DIPHYLLOBOTHRIUM LATUM

INFESTATION ON THE EASTERN SEABOARD: TWENTY-ONE CASES FROM NEW YORK *

MILTON PLOTZ, M.D.
BROOKLYN

The attention of the medical world has recently been drawn to the increasing incidence of infestation with the broad tapeworm, Diphyllobothrium latum, in the United States. There are a number of well known endemic areas, especially in the region of the Great Lakes, and cases have been reported from Massachusetts [1] but, as far as I know, no cases have previously been reported in the literature from New York. Twenty-one cases are reported here, all but two from the borough of Brooklyn. Five of the patients were born in the United States, bringing the total number of native cases reported in the literature up to thirty-one,[2] and it is quite possible that some of the others are cases of native infestation because of the length of time the patients have been in this country, but one cannot of course be sure of this.

It is of considerable importance to report these cases now. While uncommon, they are not so rare as most practicing physicians believe, and, since most patients infested with tapeworm do not enter a hospital, it is well that the family physician attempt to distinguish this worm from the very common Taenia saginata. Good descriptions are found in most textbooks of medicine and pathology and for that reason are omitted here. If fishworm infestation is really on the increase on the Eastern seaboard, it will be essential to add to the studies being conducted to determine the fish vectors and the sources of supply for that vicinity.

There are no previous records of extensive searches for the fishworm in large Eastern centers aside from Boston, but Andrews and Paulson,[3] in a study of 522 successive cases of intestinal parasitism at the Johns Hopkins Hospital, were unable to find a single case, and Paulson [4] has not seen one in his practice.

Blood studies were available in fifteen cases, all of which showed at least a mild secondary anemia. Severe anemia was found in three cases (15, 16 and 17), but in none of these does it seem justifiable to ascribe the anemia to a primary anemia (so called) of the fishworm type. In eleven cases differential counts were made, and in five of these an increase in eosinophils was found, up to from 6 to 8 per cent.

REPORTS OF CASES

CASE 1.—L. S., a Jewish housewife, aged 40, who was born in Russia and had lived in the United States for fifteen years and in Boston until two years ago, was admitted to the general medical service of Dr. Blatteis at the Jewish Hospital of Brooklyn, with a history of tasting raw gefüllte fish. Eighteen months ago, after taking castor oil for cholecystography, the patient passed a tapeworm. She also passed a portion of worm the day before admission. Ova of both fish tapeworm and Taenia saginata were found in the stools. Under treatment, a fish tapeworm 27 feet long was passed with the head. Gastric extraction showed free hydrochloric acid in the gastric contents after a test meal up to 24, and total acid up to 50. Blood examination showed red blood cells, 5,200,000; hemoglobin, 75; leukocytes, 8,700, and eosinophils, 6 per cent.

CASE 2.—I. K., a Jewish housewife, aged 63, who was born in Russia and had lived in the United States and New York for twenty-eight years, was admitted to the medical service of the Jewish Hospital. She had noticed a tapeworm for the first time twenty years ago. Her bowels had been constipated for many years. Examination of the feces showed the presence of both Trichomonas intestinalis and Diphyllobothrium latum. Blood examination showed erythrocytes, 5,120,000; hemoglobin, 70, and eosinophils, 8 per cent. Gastric extraction showed hyperacidity.

CASE 3.—G. P., a Jewish housewife, aged 36, who was born in Russia and had lived in the United States and New York eighteen years, was admitted to the medical service of the Jewish Hospital with a history of having first passed a tapeworm six months before. A fishworm was passed by the patient in the hospital. She gave a history of having had "round worms" as a child. Blood examination showed erythrocytes, 4,100,000; hemoglobin, 75 and eosinophils, 6 per cent.

CASE 4.—G. K., a Jewish housewife, aged 28, born in Russia, was admitted to the obstetric service of the Jewish Hospital for parturition. A fish tapeworm was passed by the patient during her confinement at the hospital.

CASE 5.—S. P., a Jewish girl, aged 15, born in New York, was admitted to the medical service of Dr. Joachim at the United Israel Zion Hospital, complaining of easy fatigue and palpitations for four weeks. She had had poor appetite for years. She had noticed portions of worm in her stools every few months for the past five years. After treatment, a fish tapeworm was passed in the hospital. Blood examination showed erythrocytes, 3,800,000; hemoglobin, 80. No eosinophils were found in two studies.

CASE 6.—J. V., a girl, aged 16, of Italian parentage, born in New York, was admitted to the obstetric service of the Kings

* From the Medical Service of Dr. S. R. Blatteis, Jewish Hospital of Brooklyn.

1. Ingall, M., and Freeman, H.: The Prevalence of Tapeworm Infestation in Jewish Patients, New England M. J. **202**: 679 (April 2) 1930. McGavran, E. G., and Songkla, Mahidol: Diphyllobothrium Latum in Massachusetts, J. A. M. A. **90**: 1607 (May 19) 1928.

2. Pilot, Isadore; and Levin, I. M.: Native Infestation with Diphyllobothrium Latum, Am. J. M. Sc. **181**: 710 (May) 1931.

3. Andrews, J., and Paulson, M.: The Incidence of Human Intestinal Protozoa, Am. J. M. Sc. **181**: 102 (Jan.) 1931.

4. Paulson, M. J.: Personal communication to the author.

County Hospital for parturition and syphilis. She had passed a tapeworm one year ago. Ova of the fish tapeworm were found in the stool.

CASE 7.—M. S., a Jewish housewife, aged 50, who was born in Russia and had lived in the United States thirty-five years, was admitted to the medical service of the Kings County Hospital for tapeworm. She gave a history of having passed tapeworms on several occasions for an indefinite period. Diphyllobothrium latum was passed in the hospital.

CASE 8.—H. M., a Catholic Syrian housewife, aged 21, who had lived in the United States three years, was admitted to the obstetrics service of the Cumberland Hospital for parturition. She passed segments of worm while in the hospital. Under treatment the patient passed portions of Diphyllobothrium latum with four heads.

CASE 9.—B. R., a Jewish housewife, aged 39, who was born in Roumania and had lived in this country eighteen years, was admitted to the medical service of Dr. Warren at the Long Island College Hospital, complaining of cramps before and after bowel movements for ten years, and of capricious appetite alternating with anorexia for three months. She had passed roundworms at the age of 5 years. She had never noticed any other worm in the stool until the day before admission, when she passed a portion of worm which was identified as Diphyllobothrium latum. Blood examination showed erythrocytes, 4,100,000; hemoglobin, 70, and eosinophils, 1 per cent.

CASE 10.—D. R., a Jewish boy, aged 4 years, born in New York, was admitted to the service of Dr. Sumner at the Beth Moses Hospital, complaining of attacks of diarrhea and constipation for a year and a half. At times he passed segments of worms and blood. The patient passed a fishworm under treatment. Blood examination showed erythrocytes, 4,700,000; hemoglobin, 75.

CASE 11.—S. L., a Jewish housewife, aged 58, who was born in Russia and had lived in the United States and New York forty years, was admitted to the service of Dr. Fishberg at the Montefiore Hospital, for carcinoma of the bronchus. Diphyllobothrium latum was found in the intestine at postmortem examination.

CASE 12.—R. K., a Jewish housewife, aged 60, who was born in Poland and had lived in the United States four years, was admitted to the service of Dr. Neuhof at the Montefiore Hospital, for intestinal obstruction resulting from tuberculous peritonitis. Diphyllobothrium latum, passed by the patient during her stay in hospital, apparently had nothing to do with the obstruction.

CASE 13.—M. S., a Jewish girl, aged 2½ years, born in New York, was a patient of Dr. Harry Greenwald. The chief complaint was anorexia. Diphyllobothrium latum was passed by the patient, after which she was much improved symptomatically and gained weight. Blood examination showed erythrocytes, 3,500,000; hemoglobin, 70.

CASE 14.—H. R., a Jewish housewife, aged 40, born in Russia, was admitted to the Jewish Hospital, complaining of passing tapeworms for nine years. A fish tapeworm was passed by the patient while under treatment. Blood examination showed erythrocytes, from 4,170,000 to 5,400,000; hemoglobin, 86. No eosinophilia was noted.

CASE 15.—B. K., a Jewish housewife, aged 38, born in Russia, was admitted to the gynecologic service of the Jewish Hospital, complaining of metrorrhagia of several months' duration, which was found to be caused by uterine fibroids. The patient passed a fishworm while in the hospital. Blood examination showed erythrocytes, 1,890,000; hemoglobin, 53; color index, 1.5; leukocytes, 6,000; eosinophils, 7 per cent. Aside from the high color index and questionable normoblasts on one smear, there was nothing to suggest a primary anemia, and it may be possible to account for the blood picture on the basis of chronic hemorrhage.

CASE 16.—S. K., a Jewish housewife, aged 40, born in Russia, was admitted to the medical service of the Jewish Hospital, complaining of anorexia, vomiting and "burning" of the mouth. She had complained of gradually increasing weakness for several years. She had been in the hospital one year before this admission, with a diagnosis of pernicious anemia, and was admitted this time with the same diagnosis. Diphyllobothrium latum ova were found in the stool. Gastric extraction revealed a total acidity of 14 and no free hydrochloric acid after the test meal. Blood examination showed leukocytes, 3,300, with 58 per cent polymorphonuclears, 38 per cent small lymphocytes and no eosinophils; hemoglobin, 35; erythrocytes, 1,000,000, with many megaloblasts, normoblasts, anisocytosis and poikilocytosis. Under appropriate treatment the patient passed a fish tapeworm but no head. The count rose to 3,000,000, with a hemoglobin of 70, but the count fell to 2,130,000 and the hemoglobin to 60 before discharge, and the patient did not report for follow up. With only this information, it is impossible to state definitely that this is not a spontaneous remission in a case of true pernicious anemia.

CASE 17.—S. G., a Jewish housewife, aged 30, born in Russia, was admitted to the obstetrics service of the Jewish Hospital, for vomiting of pregnancy and with a history of having passed a tapeworm at the age of 9. Ova of Diphyllobothrium latum were found in the feces during her stay in the hospital. Blood examination showed leukocytes, 9,000; polymorphonuclears, 55 per cent; eosinophils, 6 per cent; erythrocytes, 2,600,000; hemoglobin, from 44 to 66. Many megaloblasts, normoblasts, gigantoblasts, polychromatophilia, and much anisocytosis, poikilocytosis and stippling were found in the smear. Chronic glomerulonephritis was found, and the patient was discharged, with the diagnosis of nephritis and pregnancy with secondary anemia of the pernicious type. The patient was lost to further observation, so it is impossible to do more than speculate on the relationship between the parasite and the anemia. Active treatment was deferred because of the pregnancy.

CASE 18.—F. B., a Jewish housewife, aged 56, who was born in Poland and had lived in the United States twenty-six years, a patient of Dr. Max Berk, gave a history of eating raw gefüllte fish and passing tapeworm one year ago. She passed a fish tapeworm under treatment. Blood examination showed hemoglobin, 80; erythrocytes, 4,500,000; eosinophils, 2 per cent.

CASE 19.—A Jewish boy, aged 6, born in New York, was brought to Dr. Harry Beller with the complaints of irritability, failure to gain weight, and recent passage of a tapeworm, which was found to be Diphyllobothrium latum.

CASE 20.—B. L., a Jewish housewife, aged 56, who was born in Russia and had lived in the United States twenty-five years, was admitted to the medical service of Dr. Marcus at the Trinity Hospital of Brooklyn with the complaint of "having passed something by rectum." She had passed a worm two years ago. A worm passed in the hospital was found to be Diphyllobothrium latum. There was a history of having tasted raw gefüllte fish. Blood examination showed hemoglobin, 80; erythrocytes, 4,700,000. No eosinophilia was noted.

CASE 21.—A Jewish housewife, aged 47, who was born in Russia and had lived in the United States twenty-eight years (ten years in Pittsburgh and the last eighteen years in New York), came to Dr. Frederick Stenbuck with the complaint of having passed worms for several years. She said that she was always hungry and had nevertheless lost weight. She gave a history of having eaten raw gefüllte fish. Blood examination showed hemoglobin, 72; erythrocytes, 3,900,000; eosinophils, 3 per cent. After treatment the patient passed a Diphyllobothrium latum with head, and three months later had regained normal appetite and weight.

SUMMARY

1. Twenty-one cases of infestation with Diphyllobothrium latum are reported from New York City. These are the first cases reported in the literature from New York State and include five patients born in the United States, bringing the total number of reported native cases to thirty-one.

2. All but two of the patients were females and all but two Jewish.

3. Mild to severe anemia was found in all of fifteen cases in which blood studies were made. One is not justified in concluding from this series that there is a

definite relationship between primary anemia and this disease. Eosinophilia was found in five of eleven cases in which differential counts were made.

4. It is hoped that this report will stimulate further search for this parasite on the Eastern seaboard.

555 Ocean Avenue.

Clinical Notes, Suggestions and New Instruments

PITUITARY CACHEXIA (SIMMONDS' DISEASE) TREATED WITH ANTERIOR PITUITARY EXTRACT *

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The following case is presented as a contribution to the knowledge of the physiology of the pituitary body, a gland which, according to recent experimental and clinical observations, is of great importance in the regulation of many bodily processes.

REPORT OF CASE

History.—L. T., a man, aged 19, a Negro farmer, was admitted to the Duke Hospital, Nov. 15, 1930, with a complaint of weakness and "stomach trouble" for the preceding five months. He came of healthy stock, his past health had been good, and he had not been exposed to tuberculosis. The illness from which he sought relief had been characterized by occasional attacks of nausea, frequent gaseous eructations, marked constipation, extreme weakness, and loss of 45 pounds (20 Kg.). There had been progressive loss of strength, accompanied by decrease in libido and sexual power. His skin, in contrast to its usual light color and glistening appearance, had become dull, rough and dark. Much axillary and pubic hair had fallen out.

Physical Examination.—The temperature was 36.8 C. (98.2 F.), pulse 76, respirations 16, blood pressure on the right 84 systolic and 62 diastolic; on the left, 78 systolic and 62 diastolic. He weighed 44 Kg. (97 pounds). There was great emaciation and weakness. The skin was rough and scaly, with accentuation of pigmentation in the axillary folds and creases of the neck. The lungs were normal; the heart was not enlarged; the sounds were normal, with slight accentuation of the second pulmonic sound. The peripheral vascular system was normal except for the low blood pressure. The abdomen, genitalia, rectum and reflexes were normal.

The red blood count was 5,410,000; hemoglobin, 18.4 Gm.; white blood count, 4,450; polymorphonuclear neutrophils, 39 per cent; large lymphocytes, 5 per cent; small lymphocytes, 50 per cent; polymorphonuclear basophils, 1 per cent; monocytes, 5 per cent. The Wassermann test of the blood was negative. The nonprotein nitrogen, sodium chloride, uric acid and cholesterol of the blood were normal. The sugar tolerance test gave the type of curve seen in mild diabetes. The urine was normal except for an occasional trace of sugar; there was no creatine or melanin. Gastric analysis and stool examinations were negative. A tuberculin test (0.1 mg.) was positive. The Goetsch test was as follows: Subcutaneous injection of 1 cc. of 1:1,000 epinephrine caused a rise of blood pressure from 78/60 to 130/80 one minute later; the systolic level remained above 120 mm. for thirty minutes. A roentgen examination of the chest, abdomen and gastro-intestinal tract showed no abnormalities. The sella turcica was small. The basal metabolic rate was 30 per cent below normal.

Course.—On admission the emaciation, low blood pressure, asthenia, and gastro-intestinal symptoms suggested Addison's disease, although the vascular response to epinephrine and the lack of deep pigmentation were against such a diagnosis. Since a supply of the specific suprarenal hormone recently shown by Hartman [1] and by Swingle and Pfiffner [2] to be efficacious in Addison's disease was not available, we were forced to employ the usual nonspecific methods of diet and general hygiene, including the various vitamins. In addition, thyroid extract and insulin were tried but without any favorable effect on the patient's condition. He remained in bed for two months, apathetic, weak, listless, underweight. His digestion was poor, his blood pressure low; and in spite of the thyroid extract, his basal metabolic rate was 24 per cent below normal.

Finally, treatment with an acid extract of the anterior lobe of the hypophysis ("Antuitrin," Parke, Davis & Co.) in daily subcutaneous injections of 1 cc. was instituted. Within five days the patient began to improve. His strength returned, his appetite improved, constipation was relieved, and the blood pressure rose steadily to a systolic level of 116 mm. Within two weeks he had gained 7 Kg. and was sufficiently strong to assist in the janitorial work on the ward. The sugar tolerance and basal metabolic rate became normal.

He was discharged, Jan. 18, 1931, to continue injections of pituitary extract. Three weeks later, on readmission to the hospital, it was found that he had gained 2 Kg. His basal metabolic rate had fallen to 9 per cent below normal but under treatment with thyroid soon rose to 28 per cent above normal. Since his discharge from the hospital five months ago, he has received no active treatment but is still in good health, working on the farm and gaining weight steadily (total gain in weight since beginning treatment with anterior lobe extract, 16 Kg.). The blood pressure, sugar tolerance, and basal metabolic rate remain normal.

COMMENT

Although the diagnosis in cases such as this can be proved only at necropsy, the clinical picture and response to therapy in this case suggest strongly the diagnosis of pituitary cachexia, a condition originally described in 1914 by Simmonds.[3] His patient at the age of 38 had had puerperal sepsis, with subsequent cessation of menstruation, muscular weakness, attacks of unconsciousness, and premature aging. After an illness of eight years, the patient died in coma. Necropsy showed atrophy of the kidneys, ovaries, pancreas and liver ("splanchnomikrie") with necrosis and scar tissue replacement of the anterior lobe of the hypophysis. Two other cases were reported by Simmonds in 1916,[4] and two in 1918.[5] A number of cases have been observed by other writers, and Graubner [6] has summarized the clinical literature to 1925.

Clinically, these cases have been characterized by weakness, emaciation, falling of axillary and pubic hair, feelings of chilliness, gastro-intestinal atony, trophic changes in the skin, low blood pressure, low basal metabolic rate, and disturbances of the sexual functions, including cessation of menstruation, impotence and loss of libido.

Pathologically, they have been characterized by destruction of the anterior lobe of the hypophysis, with secondary atrophic changes in the thyroid, parathyroids, suprarenal cortex and reproductive glands, together with decrease in size of all abdominal organs. Various processes have been the cause of the destruction of the anterior lobe, including emboli, thromboses, tuberculosis, tumors and cysts, syphilis, and trauma.

The clinical picture has an experimental counterpart in the recent work of P. E. Smith,[7] who found that removal of the anterior lobe of the pituitary in rats led to a syndrome entirely similar to that presented by patients with Simmonds' disease. Smith's work, moreover, has furnished a rationale of treatment in these cases, for he found that replacement therapy was followed in his experimental animals by repair of many of the disabilities incident to pituitary ablation.

In view of this experimental work, the striking improvement that followed administration of anterior pituitary extract to our patient strengthens the assumption that his symptoms were due to an insufficiency of the anterior lobe of the hypophysis.

* From the Medical Clinic, Duke Hospital and Duke University School of Medicine.

1. Hartman, F. A.; Brownell, Katherine A., and Hartman, W. E.: Further Study of Hormone of Adrenal Cortex, Am. J. Physiol. **95**: 670 (Dec.) 1930.

2. Swingle, W. W., and Pfiffner, J. J.: Am. J. Physiol. **96**: 153 (Jan.) 1931; **96**: 164 (Jan.) 1931; Proc. Soc. Exper. Biol. & Med. **28**: 510 (Feb.) 1931.

3. Simmonds, M.: Ueber Hypophysisschwund mit tödlichem Ausgang, Deutsche med. Wchnschr. **40**: 322, 1914.

4. Simmonds, M.: Ueber Kachexie hypophysären Ursprungs, Deutsche med. Wchnschr. **42**: 190, 1916.

5. Simmonds, M.: Atrophie des Hypophysisvorderlappens und hypophysäre Kachexie, Deutsche med. Wchnschr. **44**: 852, 1918.

6. Graubner, W.: Die hypophysäre Kachexie (Simmondssche Krankheit), Ztschr. f. klin. Med. **101**: 249, 1925.

7. Smith, P. E.: Disabilities Caused by Hypophysectomy and Their Repair: Tuberal (Hypothalamic) Syndrome in Rat, J. A. M. A. **88**: 158 (Jan. 15) 1927.

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It can hardly be doubted that numerous cases of this type are at present either entirely unrecognized or erroneously diagnosed as Addison's disease, hypothyroidism, chronic invalidism and the like. Reliable anterior pituitary extracts would be of considerable assistance, not only from a therapeutic standpoint but as diagnostic aids in obscure cases, and will doubtless be produced. At present, however, owing largely to the lack of adequate methods of biologic assay, extracts of known, uniform potency are not available.

SUMMARY

1. A Negro farmer, aged 19, whose past health had been good and who had not been exposed to tuberculosis, had begun to suffer, five months before admission, from weakness, anorexia, nausea, gaseous eructations, constipation, loss of weight, loss of normal texture of the skin, falling of axillary and pubic hair, and decrease in libido and sexual power. Physical observations confirmed the history of loss of weight and changes in the skin and revealed weakness, apathy, subnormal temperature and low blood pressure. The sugar tolerance curve was of a mild diabetic type; the tuberculin test was positive; and the basal metabolic rate was low.

2. The patient was treated with a commercial acid extract of the anterior lobe of the hypophysis. Under this treatment his health was apparently completely restored. The blood pressure and metabolic rate returned to normal, and he gained 16 Kg.

3. Simmonds originally described this disease syndrome, and the experimental counterpart of the condition was produced in animals by P. E. Smith.

CARCINOMA OF OVARIES, WITH RECURRENCE AND METASTASES, TREATED BY SURGERY AND RADIATION *

A. W. JACOBS, M.D., NEW YORK

The majority of the malignant neoplasms of the ovary are carcinomatous and present a difficult problem in therapy. In general, results by surgery alone have not been encouraging, on account of the fact that many of the cases are inoperable by the time the diagnosis is made and surgical measures are undertaken. It is possible that, by the proper cooperation between the surgeon and the radiation therapeutist, more can be accomplished in producing an arrest of the neoplasm, palliation of symptoms and prolongation of life in comfort.

In a study [1] of a series of cases of carcinoma of the ovaries at the Montefiore Hospital during a ten-year period from 1914 to 1923, it was noted that the average total duration from the time of diagnosis until death, without any special therapy during the period from 1914 to 1921, inclusive, was twelve months; while the average duration in 1922 and 1923, when roentgen therapy was instituted, was twenty-three months. This suggested the possible value of radiation as a palliative measure in such cases.

It appears to me that in cases of abdominal neoplasms in which the ovary is considered as a probable source of primary growth, a preoperative course of radiation therapy to the pelvis, followed in about six weeks by surgical measures, would ultimately show better results than delay in therapy in obscure cases.

H. M., a woman, aged 39, married, who consulted me, Jan. 16, 1929 (two years and nine months ago), gave the following history: She was married eighteen years but had never been pregnant. Menstruation, which started when she was 13, was irregular, occurring every three to five weeks; it was profuse and was of five and six days' duration. There had been no periods since the patient had had an operation at St. Luke's Hospital in 1919.

Jan. 6, 1919, the patient was admitted to St. Luke's Hospital with a history of pain in the left side and enlargement of the abdomen, of six months' duration. Physical examination gave negative results, with the following exceptions: there was a small umbilical hernia; the uterus, which was normal in size, was rather fixed to the right side, and all the fornices, particularly the left and the posterior, were bulging and cystic.

A bilateral salpingo-oophorectomy and an appendectomy were done, and the following pathologic changes were noted: The peritoneum contained a large quantity of clear, thin, amber colored fluid; the right ovary was about as large as a peach and was markedly cystic, and there were papillomatous cauliflower-like formations which had perforated the cyst wall and were growing through into the peritoneal cavity; there were very small papillomatous growths in the immediate vicinity on the peritoneal surface. On the left side there was a very large intraligamentous cyst, the left tube was about half an inch in diameter, greatly thickened; the ovary was found to form part of the interior wall of the cyst; the appendix was enlarged, with a bulbous extremity; the uterus was normal in size and position.

Both tubes and ovaries and the appendix were removed. The pathologic report and diagnosis showed papillary adenocarcinoma of the ovaries. January 25, about three weeks after admission, the patient was discharged from the hospital, improved.

Nov. 15, 1925, almost seven years after her first admission, the patient was readmitted to the hospital, complaining of "swelling of the abdomen and vaginal bleeding." An exploratory laparotomy was done. The peritoneal cavity contained about 1 pint of clear, straw-colored fluid. A soft, cystic, grayish tumor, the top of which was free, was apparently springing from the region of the right ovary, where its base was very broad; the peritoneum in its parietal portion seemed unaffected. The visceral parts were reddened. The uterus was not seen or felt. No procedure other than the laparotomy was carried out at this time. The patient was discharged from the hospital, November 26, the condition unimproved. She subsequently received roentgen therapy at intervals under the services of Dr. Francis Carter Wood until she was referred to me, Jan. 16, 1929, when physical examination revealed a hard mass about the size of a small grapefruit in the lower portion of the abdomen.

Between Jan. 16, 1929, and Jan. 1, 1931, she received thirty-two roentgen treatments in four courses. The first course, from January 16 to February 23, consisted of twelve treatments of high voltage roentgen therapy through four portals (anterior, posterior, left and right lateral pelvic regions) at 50 cm. distance, with 180 kilovolts, 4 ma., 0.5 cm., 1 mm. of aluminum as filter, approximately one-third erythema dose each treatment, twice a week.

Another course of six treatments was given from April 13 to June 15, once a week, to only the anterior and the posterior fields of the pelvis. From October 5 to November 30, another series of eight treatments (anterior and posterior fields) was given. From March 15, 1930, to April 17, a series of six treatments, three anterior and three posterior, was given.

During all this time the patient was in good general condition, able to work in her office, and had no symptoms whatever, though the mass palpable on abdominal examination remained unchanged.

Jan. 1, 1931, the patient was in good general condition, symptomless, and was given another series of six treatments, once a week (from January 31 to March 14) anteriorly to the pelvis. The patient was doing nicely and was symptom free until Aug. 15, 1931, when she consulted me, complaining of abdominal discomfort with increase in size of the abdomen. Physical examination revealed signs of ascites and increase in the size of the pelvic mass. An abdominal paracentesis was done immediately, and 3,000 cc. of fluid was obtained. The patient was then started on another course of roentgen treatments, which she is now receiving. At present, though weak, the patient is able to continue her duties in the office. The appetite is good and the bowels are regular. Another abdominal paracentesis was done, September 23, and 2,500 cc. of fluid was obtained.

The case presented is one of unusual occurrence and interest, as the diagnosis is carcinoma of the ovaries with recurrence and metastases, treated by surgery and radiation, with a total duration of twelve and one-half years from the date of the first operation and with the patient at present apparently in comfort.

40 West Seventy-Second Street.

* Read before the meeting of the Alumni Association of Lebanon Hospital, Oct. 13, 1931.

1. Jacobs, A. W.: Am. J. Obst. & Gynec. **14**: 253 (Aug.) 1927.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

AVERAGE OPTIMUM DOSAGE OF COD LIVER OIL

At present the recommended dosages of cod liver oil differ widely. In part, the varying effects that have been reported may no doubt be explained by the unlike activity of different brands of cod liver oil. Thus, while the U. S. Pharmacopeia permits the claim that the product is biologically standardized if it contains 50 vitamin A units per gram as determined by the method given, certain brands now in New and Nonofficial Remedies guarantee a potency of 1,000 U. S. P. vitamin A units per gram, and none contains less than 500 units. The vitamin D potency of cod liver oil is probably still more uncertain, since no official method of assay has been adopted; hence it is most difficult to compare different brands of cod liver oil even if the vitamin D potency and method of assay are declared.

In view of the foregoing situation, the Council referee in charge of cod liver oil and cod liver oil preparations believed that some effort should be made to ascertain the amount of cod liver oil that must be administered under ordinary conditions to obtain the effects attributable to cod liver oil. With a view to obtaining an expression in regard to the dosage of cod liver oil, an inquiry was formulated and sent to the following pediatricians: Erik Agduhr, Murray H. Bass, Kenneth D. Blackfan, L. R. De Buys, Joseph Brennemann, Harold K. Faber, Henry J. Gerstenberger, John C. Gittings, Clifford G. Grulee, H. F. Helmholz, Alfred F. Hess, P. C. Jeans, W. McKim Mariott, Marjorie F. Murray, E. A. Park, Louis W. Sauer, Oscar M. Schloss, David H. Shelling and Frederick F. Tisdall.

The inquiry was: "What dosage of cod liver oil of high potency, taking into consideration the relationship to the age of the patients, do you recommend as a prophylactic? (It will add to the value of your reply if you will state the vitamin A and D potency of the oil on which your answer is based, together with reference to the method used for determining this potency.)"

Following are abstracts of the replies which have been received from the pediatricians consulted:

First consultant—

As a prophylactic, he recommends for infants from 0.5 to 1 cc. daily; for children, from 1 to 1.5 cc. daily; and for adults, up to 3 cc. daily, the administration in any case not being continued for a longer time than a month, and being resumed again if necessary only after an interval of a fortnight or a month.

He recommends cod liver oil preparations only of the highest potency of vitamin A and D, "because these vitamins are not responsible for the toxicity of the oil, which is the case with several of the other constituents"; he believes that "cod liver oil dosed to children in the usual therapeutic quantity as practiced in Sweden (a teaspoonful thrice daily) causes heart lesions provable electrocardiographically within one and one-half to two and one-half months." (He uses a standardized cod liver oil which has a vitamin D potency such that 0.003 Gm. cures experimental rickets in rats in a week, and a vitamin A potency such that 0.002 Gm. will cure ophthalmia in rats.)

Second consultant—

As a prophylactic in the young infant, he recommends at least 2 teaspoonfuls daily; as a curative at the first sign of rickets, 3 teaspoonfuls daily. (He prescribes a brand accepted for New and Nonofficial Remedies.)

Third consultant—

In the absence of actual agreement as to the method of determining the potency of vitamins A and D, he regulates the dosage of cod liver oil according to the age and rate of growth of the patient, and according to the socio-economic, seasonal and geographic conditions.

As a prophylactic, he states that in most instances 1 teaspoonful three times a day should be sufficient to prevent deficiency manifestations of A and D in infants. (He recommends a brand of cod liver oil accepted for N. N. R.)

Fourth consultant—

He states that his observations a few years ago on "The Effect of the Routine Administration of Cod Liver Oil in the Development of Rickets in the Breast-Fed" had shown little prophylactic or curative value for the cod liver oil, using at that time an "ordinary market cod liver oil." But he has since been using a standard oil of known potency, and now the patients in the "Newly Born Service" have been comparatively free from rickets.

As a prophylactic, he recommends, beginning at the first month, 15 drops three times a day; during the second and third months, one-half teaspoonful three times a day; during the fourth and fifth months, 1 teaspoonful three times a day; and from the sixth to the twelfth month, 2 teaspoonfuls three times daily. The dosage is supplemented by daily sun baths throughout the year.

Occasional cases of rickets, he states, have been found among those actually following directions, as evidenced by cranial bosses, costal beading and flaring ribs, but these rarely involve active lesions in the bones of the wrist as evidenced by either roentgen or blood examination. (He uses a brand of cod liver oil accepted for N. N. R.)

Fifth consultant—

As a prophylactic, he recommends one-fourth teaspoonful daily at 1 month, increasing to one-half teaspoonful by 2 months, to 1 teaspoonful by 3 months, and to a maximum of 3 teaspoonfuls daily by about the fifth or sixth month. (He prescribes brands accepted for N. N. R.)

Sixth consultant—

As a prophylactic, he states that 15 cc. daily is adequate in view of the low incidence of rickets in his section. (He prescribes brands accepted for N. N. R.)

Seventh consultant—

He has found the 3.5 cc. of cod liver oil contained in 1 liter of a proprietary modified milk preparation more than enough to cure and to prevent rickets when thus fed, even in "remarkably growing premature infants." He also has found cod liver oil in doses up to 5 cc. a day adequate for the cure of actively rachitic infants. He starts cod liver oil usually at the end of the second week when the infant begins to grow well, and the stated dosage more than suffices even when the child is 1 year or more of age, because of the diminished rate of growth.

Hence, as a prophylactic and curative, he recommends 5 cc. daily for infants, young children and children, beginning at the second week of life. (He uses an oil of such potency that 5 mg. daily has always been enough to prevent rickets in rats, the oil having at least 1,000 units per cubic centimeter of vitamin A and 20 units of vitamin D.)

Eighth consultant—

As a prophylactic, he recommends from 1 to 2 teaspoonfuls daily of cod liver oil with viosterol to avoid disturbance of the digestion and appetite.

Individual cases, not developing normally, require additional use of ultraviolet radiation, sunlight or "sky light," but any except the mildest forms of rickets, he states, can be prevented with 2 teaspoonfuls daily of cod liver oil with viosterol. (He uses standard brands, such as those accepted for N. N. R.)

Ninth consultant—

As a prophylactic, he recommends from one-half to one teaspoonful three times a day. (He uses various standard N. N. R. brands.)

Tenth consultant—

As a prophylactic, he recommends one-half teaspoonful a day beginning during the first month, increasing in the course of two weeks to 2 teaspoonfuls a day, which dosage is continued through the first year of life and during the period from October to May in the second year of life.

As a curative, he uses 3 teaspoonfuls daily. (He uses only the best grades of plain cod liver oil.)

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Eleventh consultant—

As a prophylactic, he recommends from 5 to 10 drops at 1 month of age (increasing rapidly to one-half teaspoonful daily); 1½ teaspoonfuls at 6 weeks; and 3 teaspoonfuls a day at 3 months, this last dose being continued throughout infancy.

This amount of oil, he states, does not invariably prevent rickets but accomplishes this result in most cases, and when the disease does develop it is of a mild form and rarely of a degree that is evident by roentgen rays.

He points out the difficulty of proving that a diet contains the optimum amount of vitamin A but holds that there is probably no suffering from a lack of it when adequate amounts of milk are received. (He uses a standardized oil that initiates healing of rickets in five days when fed at a level of 0.25 per cent and that is curative for ophthalmia when fed ten days at the level of 1/10 per cent.)

Twelfth consultant—

As a prophylactic, he recommends 1 teaspoonful daily for both infants and children, this sufficing even in a group of rapidly growing babies who received a diet of undiluted lactic acid milk generously supplemented at an early period with orange juice, vegetable and fruit purées, and egg yolk, no evidence of rickets being demonstrable with certainty by roentgen examination of the wrists, while the phosphorus and calcium retentions were relatively tremendous. (He does not state the brand or potency of the oil used.)

Thirteenth consultant—

As a prophylactic, he recommends one-half teaspoonful three times a day during the first four months of life, and from 1 to 1½ teaspoonfuls three times a day after 4 months, sometimes increasing this dosage in the case of large and very rapidly growing infants. (This dosage contemplates oils with a vitamin A potency in the neighborhood of 500 units per gram, and a claimed D potency of from 75 to 100 units per gram.)

Fourteenth consultant—

As a prophylactic, he recommends 4 cc. beginning about the eighth day, increasing up to 12 cc. after 3 months of age. He states that no clinically evident rickets is observed in these cases, excepting a mild degree in those cases in which the patients are careless in the giving of cod liver oil.

He uses concentrated cod liver oils and viosterol preparations in a small number of cases in which the cod liver oil has been badly tolerated. (He prescribes standard preparations, such as those accepted for N. R. R.)

Fifteenth consultant—

As a prophylactic and curative, he recommends 3 teaspoonfuls daily as an adequate quantity and at the same time as the advisable quantity to use, excepting in certain cases, notably premature infants, and full term infants suffering from chronic infections, in which cases 3 teaspoonfuls cannot be relied on to be adequate. Though he prefers plain cod liver oil to viosterol, he considers it advisable in these exceptions, as well as in late rickets, to use cod liver oil and viosterol rather than to increase the dosage of cod liver oil. He points out, however, that some forms of late rickets may be resistant to any amount of viosterol, these being of different origin from ordinary rickets.

He agrees in the main with the recommendations of the eighteenth consultant.

Sixteenth consultant—

As a prophylactic in the average infant, he recommends one-half teaspoonful three times a day before the end of the first month, increasing to 1 teaspoonful three times a day before the end of the third month, the premature infant and children with rickets, requiring about twice this amount for about three years. He prefers viosterol or 10 D cod liver oil in the latter cases, to avoid disturbance of the appetite and digestion.

He gives cod liver oil or viosterol daily until after the third winter. (He recommends brands accepted for N. N. R.)

Seventeenth consultant—

As a prophylactic for a young infant, he recommends from 2 to 3 teaspoonfuls a day. He states that even such doses are not always adequate to prevent the development of mild degrees of rickets, particularly in babies who are born in the fall, but that they are sufficient to prevent pronounced signs of the disease. (His conclusions are based on the use of an oil accepted for N. N. R.)

Eighteenth consultant—

He states that the dosage of cod liver oil in children involves a consideration of the factors of (1) age, (2) race, (3) diet and environment (including food, exposure to sunlight, etc.), and (4) prematurity and rapid growth.

As a prophylactic and curative for the average white child on a diet adequate in other respects, he recommends from 2 to 3 teaspoonfuls daily, starting with small amounts at from 4 to 6 weeks of age and working up to the full amount in two weeks, this quantity being continued until the child is at least 1½ to 2 years old, there being very little difference, he states, in the protective or curative dose of cod liver oil or viosterol for different ages up to 2 years.

Prophylactic and curative for the average Negro child (starting at 4 weeks of age with small amounts), he recommends 3 teaspoonfuls by the end of 6 weeks, though from 4 to 5 teaspoonfuls may be given if there are no gastro-intestinal upsets from too much fat intake. As a curative dosage for severe active rickets, he recommends from 5 to 6 teaspoonfuls of cod liver oil, in order to cure the disease in a relatively short time and thereby to prevent deformities.

As a prophylactic for premature white infants, he recommends at least 3 teaspoonfuls of cod liver oil; for premature Negro infants, from 4 to 5 teaspoonfuls. Either 10 D cod liver oil or viosterol, he states, is highly efficacious in these cases. (He uses a standard cod liver oil of such potency that 0.25 per cent in the diet will give a continuous line in the provisional zone in five days.)

Nineteenth consultant—

As a prophylactic and curative, he recommends from one-fourth to one-half teaspoonful three times a day, starting at 1 month of age, increasing in two or three weeks to 1 teaspoonful three times a day, this amount being continued throughout the whole of the first year and not stopped in the summer months until the infant is tanned all over by exposure to sunshine. With this amount of cod liver oil he has never had rickets in the ordinary sense of the word develop, except occasionally a slight degree of craniotabes in a premature or a rapidly growing infant, 10 D preparations being used in these cases with good results.

He believes that the adequate dose for the older child from the second year on may be less than for the rapidly growing infant during the first year, but in practice he continues this dosage at 1 teaspoonful three times a day. He uses the same amount in children at any age throughout the winter months if they can be persuaded to take it. (His conclusions are based on the use of a brand of cod liver oil accepted for N. N. R.)

It will be seen from the foregoing abstracts that little reference is made to the possible physiologic value of the vitamin A of cod liver oil. The consideration of dosage is expressed wholly in relation to the vitamin D content, or in terms of its effects in overcoming the relatively obvious physical manifestations of rickets. This situation may be attributable to the fact that "it is difficult to prove that a diet contains the optimum amount of vitamin A, but probably there is no suffering from a lack of it where adequate amounts of milk are received."

Apart from its bearing on the distinctive manifestations of a vitamin A deficiency, the question of vitamin A requirement may be an important one in relation to the development and treatment of rickets. Thus Karasinski,[1] in a study of experimental and natural rickets, regards the disorder as one of development provoked not only by the lack of vitamin D but also by that of vitamin A. Barnes, Brady and James,[2] in a clinical study of the comparative value of cod liver oil and viosterol in rickets, conclude that there is no justification for

1. Karasinski, Stanislas: Recherches sur l'action de l'huile de morue et de l'ergostérine irradiée dans le rachitisme expérimental, J. de physiol. et de path. gén. **27**: 565 (Sept.) 1929.

2. Barnes, D. J.; Brady, M. J., and James, E. M.: Comparative Value of Irradiated Ergosterol and Cod Liver Oil as Prophylactic Agent When Given in Equivalent Dosage According to Rat Units of Vitamin D, Am. J. Dis. Child. **39**: 45 (Jan.) 1930.

considering rat units of vitamin D in viosterol as equivalent to the same number of rat units of vitamin D in cod liver oil used as a curative or prophylactic remedy for rickets in children. De Sanctis and Craig,[3] in a similar series of observations, have arrived at the same conclusion. In a study of leg weakness in chickens, Massengale and Nussmeier [4] found that viosterol in concentrated or dilute solution was much less effective in preventing the condition than was the rat equivalent amount of cod liver oil. Poulsson,[5] commenting on the researches of Barnes, of De Sanctis and of Massengale, states that it is an incomplete therapy in children that does not recognize the synergistic combination of vitamins A and D and that does not provide both, thus insuring proper calcification of the skeleton, the proper development of the body, and the raising of vitality equally against bronchitis and pneumonia, which are of bad prognosis in rickets. In all the opinions just cited, the authors apparently recognize the added value of vitamin A and prescribe cod liver oil in preference to plain viosterol. Viosterol is favored, however, but only as a supplement, such as cod liver oil with viosterol 10 D, when a large curative dose of plain cod liver oil would impair the appetite or would not otherwise be well tolerated.

Most of the pediatricians quoted in the foregoing abstracts seem to agree on a dosage of 3 teaspoonfuls daily as amply sufficient to prevent and cure clinically evident rickets. A few, however, although habitually employing this dosage in their practice, believe that occasionally a case of mild clinical rickets may develop even with this amount in the average white child.

The outstanding exception to the dosages favored by the American pediatricians is that furnished by Agduhr of Upsala, Sweden; namely, a daily dose of only 0.5 cc. in infants. He even advises against the continuous prolonged administration of this small amount, which counsel seems to have been dictated, however, by his fear not of an excessive amount of vitamins A and D but of the possible toxic effects of other constituents of the oil. Thus, although he concedes that the average empiric dosage in Sweden is 3 teaspoonfuls a day, he states that this quantity causes heart lesions demonstrable electrocardiographically within from one and one-half to two and one-half months. The contentions of Agduhr concerning pathologic effects of cod liver oil have not been supported by the reports of other investigators.

In contrast to the practice of physicians in former years, most of the pediatricians reported in the foregoing abstracts begin the administration of cod liver oil at a time when the growth begins to accelerate—if not within two weeks, then at least before the end of the first month—reaching the maximum dosage usually during the third and rarely later than the fourth month, thus usually aborting the rickets in its earliest incipience and hence obviating the use of large doses later. There appears to be general agreement that it is only during these first two or three months of most rapid growth that the child requires its maximum dosage of cod liver oil, which may be continued as an ample dosage on up to 2 years of age. This is in general agreement with the results of animal experimentation. Thus, Steenbock [6] reports: "a comparatively low level of antirachitic over a long period of time is to be preferred to a high level over a short period."

For the reasons indicated, the usual average daily dose is somewhat augmented in the case of premature and unusually rapid-growing infants. In the absence of an increased phosphorus retention, the accelerated growth of the glandular and other tissues of these infants tends (according to Shelling) to make an unusual demand on the phosphorus reserves, so that the bones are the first to suffer.

From the point of view of race, a special exception is made to the general rule in the case of Negro infants, on account of their marked predisposition to rickets, due probably (according to Shelling) to differences in the character of the diet, the rate of growth, and the pigmentation of the skin. Though the administration of the average dosage for white infants of 3 teaspoonfuls, if properly supervised, may adequately protect even these Negro infants, 4 or 5 teaspoonfuls should be given if well tolerated by the digestive system; otherwise cod liver oil fortified with viosterol should be given.

Though few comments are made on the particular diets of the infants, it is assumed that these have been as carefully supervised (even in the "mild" cases of rickets) as has been the administration of cod liver oil; for cod liver oil cannot be expected to compensate for the deficiencies and "lack of balance" among the various food factors of the diet. A more nearly optimum ratio of calcium to phosphorus in the diet may call for a smaller quantity of vitamin D.

In connection with the acid-base balance, Samuels and Kugelmass [7] have emphasized the value of a base-forming diet (secured by a generous supplementing of whole milk with fruit and vegetable juices) in favoring the retention of calcium and phosphorus; this as opposed to an acid-forming diet of high-carbohydrate milk dilutions and cereals, which would tend to favor a calcium deficit and so promote the development of rickets.

The low dosages found adequately protective by the seventh and twelfth consultants, amounting in either case to not more than 1 teaspoonful daily, may thus perhaps be referable to a more strict supervision of the dietetic factors just considered. The infants of the twelfth consultant's experimental group were fed undiluted lactic acid milk, which was early and generously supplemented by other foods such as orange juice, vegetable and fruit purées, and egg yolk, such a diet being rich not only in mineral content but also in diversity and quantity of vitamins.

The seventh consultant not only begins the administration at the early age of 2 weeks but gives it in conjunction with a claimed well balanced dietary mixture.

The influence of geographic location, so far as it affects the relative distribution of sunlight, seems to constitute a negligible factor in the final determination of dosage, perhaps because of the modern cult of the sun bath. Thus, the fourth and the nineteenth consultants, both insistent on the accessory value of sunlight, agree independently on the same preventive dose of cod liver oil, as applied to regions so distant from each other as Canada and Louisiana. Even the diminution in sunlight occasioned by the winter season and by the smoke pall in the cities seems in most cases to be well compensated for by an increase to 3 teaspoonfuls.

Some of the clinical investigators previously quoted, in our consideration of the rôle of vitamin A in the prevention and cure of rickets, have arrived at similar values for the average dosage of cod liver oil. Thus Barnes, Brady and James [2] found that 3 teaspoonfuls daily (equivalent to 1,400 Oslo rat units of vitamin D) prevented or cured rickets in 95 per cent of the cases studied, as against 44 per cent receiving plain viosterol. De Sanctis and Craig,[3] likewise employing the same dosage and potency, have prevented rickets in 97 per cent of 100 cases studied as against 77 per cent receiving plain viosterol.

In conclusion, therefore, making due allowance for variations in potency of the standard oils; for the factors of age, rate of growth, race, diet, sunlight and climate, for the important rôle of intercurrent infections in the production of rickets, and bearing in mind the contention of A. F. Hess [8] that "no antirachitic agent is able absolutely to prevent rickets if the disorder is judged by the most delicate clinical criteria," the foregoing dosage of 3 teaspoonfuls (12 cc.; 3 fluidrachms) daily, thus empirically and experimentally arrived at, may tentatively be set as the standard optimum dosage of cod liver oil for the average infant at 3 months of age. This standard of 3 teaspoonfuls may sometimes be more than is required. It will rarely be an inadequate amount, and in the majority of cases it represents the best standard that can be established at present.

3. De Sanctis, A. G., and Craig, J. D.: Comparative Value of Viosterol (Irradiated Ergosterol) and Cod Liver Oil as Prophylactic Antirachitic Agents, J. A. M. A. **94:** 1285 (April 26) 1930.

4. Massengale, O. N., and Nussmeier, Mildred: The Action of Activated Ergosterol in the Chicken: II. The Prevention of Leg Weakness, J. Biol. Chem. **87:** 423 (June) 1930.

5. Poulsson, E.: Ueber die Wirksamkeit von Dorschlebertran und bestrahlten Präparaten bei Rachitis, Deutsche med. Wchnschr. **57:** 664 (April 17) 1931.

6. Steenbock, H., and Black, A.: Fat-Soluble Vitamins: The Induction of Growth-Promoting and Calcifying Properties in Fats and Their Unsaponifiable Constituents by Exposure to Light, J. Biol. Chem. **64:** 263 (June) 1925.

7. Samuels, Emma L., and Kugelmass, I. N.: Acid- and Base-Forming Diets in Metabolism of Rats, Am. J. Dis. Child. **39:** 687 (April) 1930.

8. Hess, A. F.; Lewis, J. M.; MacLeod, F. L., and Thomas, B. H.: Antirachitic Potency of the Milk of Cows Fed Irradiated Yeast or Ergosterol: A Clinical Test, J. A. M. A. **97:** 370 (Aug. 8) 1931.

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Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

RE UMBERTO BRAND IMPORTED PURE OLIVE OIL

Importer and Distributor.—Strohmeyer and Arpe Company, New York.

Description.—An imported olive oil in cans and bottles.

Manufacture.—Pure first quality olive oil from ripe selected olives is imported from the important olive oil producing countries, mainly Spain and Italy. The oil is selected according to the company's standards by a representative in the countries of production; only olive oil under 1 per cent acidity as oleic acid and fulfilling analytic tests for purity is purchased.

Each importation is examined for flavor, specific gravity, presence of cottonseed, sesame and peanut oils, added sulphur, acidity, iodine number, refractive index, and saponification number. Oils not strictly fulfilling the specifications for a pure olive oil or the company's requirements are rejected. The accepted oils of the highest quality are carefully blended to maintain a uniform high quality oil for this brand, automatically filtered and packed in bottles or cans. Nothing is added to the oil. The careful blending is essential in that the flavor of olive oil changes with age. New crop oil generally is sharp in taste, which becomes more nearly "neutral" after aging. The blending depends on experienced judgment.

Chemical Composition (submitted by manufacturer).—

Specific gravity, 25 C./25 C.	0.911
Refractive index, 20 C.	1.469
Saponification number	192
Iodine number	84
Cottonseed oil (Halphen test)	absent
Sesame oil (Baudouin test, modified Villavecchia test)	absent
Peanut oil (A. O. A. C. test)	absent
Sulphur	absent
Acidity, as oleic acid	0.9%

Calories.—9.0 per gram; 256 per ounce.

Claims of Manufacturer.—An imported pure olive oil for table use.

BARBER'S SILVER STRIPE BREAD

Manufacturer.—Thos. C. Hill and Son Company, Trenton, N. J.

Description.—A white bread made by the sponge dough method.

Manufacture.—The sponge dough ingredients, 90 per cent patent flour of Northwest wheat, water, yeast, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose, and dried skim milk to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in waxpaper.

The factory, equipment and storage rooms are kept in strictly sanitary condition.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.9
Ash	0.7
Fat (direct ether extraction method)	0.9
Protein (N × 6.25)	9.6
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	52.7

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

KARO (Blue Label)

A table delicacy composed of corn syrup of the highest grade and refiners' syrup

Manufacturer.—Corn Products Refining Company, New York.

Description.—A table syrup; a corn syrup base flavored with refiners' syrup.

Manufacture.—The product is a mixture of corn syrup with a relatively small amount of refiners' syrup. The refiners' syrup must be acceptable in flavor and color and fulfil the U. S. Department of Agriculture standard for that product: "Refiners' syrup, treacle, is the residual liquid product obtained in the process of refining raw sugars, and contains not more than 25 per cent of water and not more than 8 per cent of ash."

The corn syrup is manufactured as described under Karo (Crystal White) (THE JOURNAL, Jan. 9, 1932, p. 143). The mixing of the corn syrup and refiners' syrup and the processing of the mixture are essentially the same as for Karo (Crystal White).

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	25.3
Ash	0.6
Fat (ether extract)	0.0
Protein (N × 6.25)	0.2
Dextrins (by difference)	37.1
Maltose (method of Wesener and Teller, J. Indust. & Engin. Chem. **7**: 1009, 1916)	22.2
Dextrose (method of Wesener and Teller, J. Indust. & Engin. Chem. **7**: 1009, 1916)	7.5
Sucrose	4.8
Invert sugar	2.3
Titratable acidity as HCl	0.025

Calories.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—See this section for Karo (Crystal White).

ALPINE, LION, AND EVERYDAY BRANDS STERILIZED, UNSWEETENED EVAPORATED MILK

Manufacturer.—Nestle's Milk Products, Inc., New York City.

Description.—An unsweetened, sterilized evaporated milk.

Manufacture.—The milk used is from dairy farms which are under the supervision of the company's inspectors, who exercise a constant surveillance over the health of the cows, the sanitary condition of the barns and utensils and the methods of milking. The fresh milk is strained, cooled, and delivered to the condenseries in clean cans, and must pass inspection for cleanliness, freshness and flavor.

The milk is heated to 85 C. and then concentrated in "vacuum pans" at a temperature of about 55 C. to somewhat less than one-half its original volume, the concentration being such that the evaporated milk conforms to the U. S. Department of Agriculture standard. The concentrated milk is homogenized by forcing under pressure through small apertures, which disperses the milk fat in small globules which do not separate out during storage. The homogenized milk is cooled to about 3 C. and filled into cans through "pin-hole" openings, which are immediately sealed. The canned milk is sterilized by processing for fifteen to eighteen minutes at a temperature of 115 to 120 C., immediately cooled and label-wrapped after a short storage period.

Chemical Composition (submitted by manufacturer).—

	per cent
Total solids	25.50–27.0
Ash	1.5 – 1.6
Fat (ether extract)	7.8 – 7.9
Protein (N × 6.38)	6.8 – 7.8
Lactose (by difference)	9.6 –10.5

Calories.—1.4 per gram; 39 per ounce.

Vitamins.—The vitamins A, B, C and G of the fresh milk are only slightly impaired.

Claims of Manufacturer.—These brands of evaporated milk are suitable for general cooking, baking and table uses and in infant feeding. The mixture of equal parts of the evaporated milk and water is not below the legal standard for whole milk. The curds formed in the stomach are smaller, softer and more readily digestible than those from raw or pasteurized milk.

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SATURDAY, JANUARY 23, 1932

NUTRITIONAL ANEMIA

Prior to the twentieth century the writings and investigations of Liebig, Voit and Forster had indicated the essential nature of inorganic salts in nutrition, and the biochemical importance of calcium, phosphorus and other of the commoner elements had been established. Later, with the discovery of iodine in the thyroid gland by Baumann in 1895, attention was called to the elements present in the body and required for normal function in minute amounts. Shortly afterward, in 1900, it was demonstrated by Abderhalden that unmistakable evidence of anemia was produced in laboratory animals when they were limited to milk as the sole article of diet. The following year Bunge showed that milk is poor in iron. The fact that hemoglobin contains iron, together with the foregoing observations on anemia, led to repeated attempts to demonstrate the therapeutic value of iron in anemia of various etiology. The results, however, have never been unequivocally in favor of the efficacy of iron. After a general lapse of interest, the question of anemia with milk diet, or nutritional anemia, was reopened in 1925 by Hart and his co-workers at the University of Wisconsin. They later reported remission of the milk anemia in rats by the addition of iron and copper, though iron alone was ineffective. With the increasing use of the albino rat in nutritional investigations and renewed interest in the metabolism of inorganic salts, extensive biochemical study of nutritional anemia has been carried out, especially in this country. The result is that at present the observations reported from different laboratories do not agree as to certain fundamental features of the cure of this condition. The disturbing point of difference is the necessity for and the effectiveness of other elements to supplement iron in the cure of the disease. An extensive series of studies bearing on this and other details relating to nutritional anemia has recently been reported by Beard, Myers and their associates at Western Reserve University.

At the outset the Cleveland investigators point out that in their experience iron alone will stimulate a response both of erythrocytes and of hemoglobin with a resulting cure of the anemia. The question of contamination of the milk with other metals as well as the chemical purity of the iron salt employed has been considered. After the curative agent is given, the rate of regeneration of the erythrocytes is greater than that of the pigment. With iron alone the rate of remission of the disease in rats is proportional to the amount given; with 0.25 mg. daily the cells return to normal value in four and a half weeks and the hemoglobin in six weeks, whereas with 2 mg. the time required for return to normal values is one and four-fifths weeks for both the cells and the hemoglobin. Not only did the addition of iron to the milk cure the typical anemia in young rats but, when the adjuvant was present in the milk from the beginning, the condition failed to develop. The authors consider that nutritional anemia produced by an exclusive milk diet is an inorganic iron deficiency disease.

The supplementary effect of other metals with iron in curing nutritional anemia was studied by Beard and Myers. When compounds containing copper, nickel, germanium, manganese, arsenic, titanium, zinc, rubidium, chromium, vanadium, selenium and mercury were each fed separately as an addition to 0.5 mg. of iron, the regeneration of hemoglobin and of erythrocytes occurred in somewhat less than half the time required for a similar response with the given quantity of iron alone. The quantities of the various supplementing elements that were effective with a given amount of iron varied considerably and the rate of regeneration of the red cells and pigment could be varied by changing the quantity of the supplement given with the fixed amount of iron. It is significant that the order of effectiveness of the different supplementing metals varied somewhat depending on the level of iron with which they were given. A further observation of possible significance in explaining the action of the various effective supplementing elements was the production of polycythemia and abnormally high hemoglobin concentrations in the blood when the therapeutic measures were continued beyond the "cured" stage in young animals or when the metallic salts with or without iron were given to adult rats on an adequate ration. It appears that a number of elements exert a stimulating action on the hematopoietic functions under these conditions.[1]

The course of the response to the curative measures employed was followed by a study of the relative number of reticulocytes. The normal young rat has about 3 per cent of reticulocytes in the circulating blood; when

1. Beard, H. H., and Myers, V. C.: Studies in the Nutritional Anemia of the Rat: I. Influence of Iron upon Blood Regeneration, J. Biol. Chem. **94**: 71 (Nov.) 1931; II. Influence of Iron Plus Supplements of Other Inorganic Elements upon Blood Regeneration, ibid., p. 89. Beard, H. H.; Rafferty, C., and Myers, V. C.: III. The Prevention of Anemia by Means of Inorganic Elements, ibid., p. 111. Myers, V. C.; Beard, H. H., and Barnes, B. O.: IV. The Production of Hemoglobinemia and Polycythemia in Normal Animals by Means of Inorganic Elements, ibid., p. 117. Beard, H. H.; Baker, R. W., and Myers, V. C.: V. The Action of Iron and Iron Supplemented with Other Elements upon the Daily Reticulocyte, Erythrocyte and Hemoglobin Response, ibid., p. 123. Beard, H. H.: VI. The Effect of Inorganic Elements upon the Rate of Blood Regeneration and Growth, ibid., p. 135.

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anemia occurred on an exclusive milk ration the reticulocytes increased as the number of erythrocytes fell, amounting in six weeks to from 15 to 20 per cent. When iron alone was given, the reticulocyte count increased to from 30 to 40 per cent in a series of peaks extending over a period of six or seven days, when there occurred a decrease to the normal value in three or four more days. When the effective supplementing metals were given, there was one immediate rise to the maximum level and then a rapid drop, so that the entire cycle was complete in six or eight days. Beard and Myers interpret these observations to mean that the essential hematopoietic stimulant is the iron; the difference between the responses with and without the supplementing elements lies in the speed of transformation from reticulocytes to mature erythrocytes with their normal content of pigment. That the increase in red cells and hemoglobin in the blood of anemic animals under the favorable therapeutic treatment outlined in these studies is intimately bound up with the general growth response of the body is shown by the close correlation between the increase in hemoglobin and increase in body weight when optimal amounts of mineral supplements are given.

These investigations extend considerably the available knowledge bearing on nutritional anemia. That there are still other factors involved in the remission of this disease under the experimental conditions imposed is obvious from the discordant results obtained in various laboratories. Solutions of iron salts previously found ineffective when fed without supplementary metallic elements in two widely separated institutions have been found capable of stimulating the production of erythrocytes and hemoglobin in the Cleveland laboratories. Furthermore, sometime earlier a sample of the manganese salt found effective in supplementing iron in Kansas did not result in a cure of nutritional anemia in Wisconsin under apparently similar conditions. It thus appears that more or less local factors have influenced the outcome of these studies. That ultraviolet radiation, of such remarkable efficacy in some disturbances of inorganic salt metabolism, is a possible factor to be considered in solving the discrepancies between the experimental results of various investigators is apparent from the recent study of Foster.[2] Albino rats exposed to the light from a mercury vapor lamp apparently showed a slight but definite increase in hemoglobin regeneration, whereas those receiving radiant energy from a carbon arc with a smaller proportion of ultraviolet rays exhibited no response.

One of the characteristics of a scientific observation is its reproducibility under comparable experimental conditions irrespective of geographic location. From this point of view the present investigation of nutritional anemia is in an unsatisfactory state. A more hopeful view, however, is the possibility that further research along the lines here discussed will elucidate pertinent information concerning subtle factors that exert a heretofore unappreciated influence on the nutritive well being of the organism.

2. Foster, P. G.: Effect of Radiant Energy on Milk Anemia in Rats, J. Nutrition 4: 517, 1931.

LEGISLATION ON MEDICINAL LIQUOR

The arbitrary and unreasonable limitations on the medicinal use of alcohol and alcoholic liquor, now imposed by the National Prohibition Act and supplementary legislation, will be removed if the bill (S. 3090) recently introduced by Senator Copeland at the request of the American Medical Association is enacted. Its enactment will make effective, too, the unanimous recommendation of the Wickersham Commission that the limitations of which the medical profession complained be removed. The bill, prepared by the Bureau of Legal Medicine and Legislation under instructions from the House of Delegates, was introduced by Senator Copeland, January 18. It proposes that the present specific quantitative limitations be removed and that the law provide only that a prescription be not given for more liquor than is necessary to supply the patient's medicinal needs. To discourage persons from attempting to obtain medicinal liquor through subterfuge, with a view to converting it to beverage uses, the bill proposes to make it unlawful for any person, by any false statement or representation, to induce any physician to prescribe liquor when it is not medicinally necessary or in excess of the quantity medicinally needed. If this bill is passed, the limitation on the number of prescription blanks that may be issued to a physician will be removed.

The Secretary of the Treasury and the Attorney General are to continue as at present to issue such regulations as are necessary for the enforcement of the law, but the bill provides that no limit shall be imposed by any such regulation on the number of prescription blanks a physician may obtain or the number of prescriptions he may write, or on the quantity of liquor he may prescribe to any one patient. The confidential relations between physician and patient are to be insured by providing that no physician shall be called on to file any statement, in any office of the government, of the ailment from which his patient is suffering, or to keep his records in such a way as to lead to the disclosure of such ailments, except that he may be required to disclose such information in court or in course of hearings held under the National Prohibition Act or to disclose it to duly qualified persons engaged in the execution and enforcement of the act.

The enactment of this bill will enable physicians to employ alcohol and alcoholic liquor medicinally in such doses as are therapeutically indicated, instead of being limited to a dosage arbitrarily fixed by statute. It will protect professional secrecy. It will thus remove the principal grounds for resentment against the national prohibition laws that so many physicians feel

in the practice of their profession. Whether it is or is not enacted will depend largely on the activity of the medical profession throughout the country in making known their desires with respect to the matter. In the Senate, the bill that has been introduced has been referred to the Committee on the Judiciary, of which Senator George W. Norris of Nebraska is chairman. It is expected that a companion bill will be promptly introduced in the House of Representatives and be referred to the Committee on the Judiciary, of which Representative Hatton W. Sumners of Texas is chairman. Letters and telegrams urging the enactment of such legislation should be promptly forwarded to the chairmen of the committees named and to the Senators and Representatives from the states and districts in which the senders of such telegrams reside.

FUNCTIONAL LIVER TESTS

Year after year the search for useful tests of liver and kidney function continues in the clinical laboratories. This fact attests, of course, the importance of these organs and the difficulties of securing highly specific indications of disorder in them. Perhaps the foremost test of the present day—a procedure that has managed to survive most of the criticisms and to serve a demonstrable usefulness—is the phenolsulphonphthalein test for the adequacy of the renal function. After injection of the dye a considerable proportion of it, perhaps 75 per cent, is promptly excreted through the kidneys. Delay in elimination is therefore accepted as evidence of disordered renal activity. It has been generally known that all of the administered dye is only rarely recovered, even under most favorable conditions. Some investigators have postulated a partial destruction of the dye in the tissues. More significant is the observation that some of the dye is excreted with the bile into the alimentary tract, the amount being seemingly small and unimportant so far as it involves interpretation of the renal conditions. It has been surprising, however, to learn that sometimes the renal output of the dye is considerably augmented, so that more than 90 per cent may be recovered in the urine.

An explanation of such observations is now forthcoming. Hanner and Whipple [1] of the University of Rochester School of Medicine have found by animal experiments that when there is necrosis of the liver, such as chloroform poisoning produces, there is a rise in the elimination of phenolsulphonphthalein by the normal kidney. A rise in elimination from a control level of 75 or 78 per cent to from 90 to 97 per cent may be noted. With repair of the hepatic injury, the elimination of the dye returns to normal. Phosphorus poisoning gives a similar but less striking reaction. It seems that when elimination through the liver into the bile is somehow impaired, the kidneys may compensate and excrete more than the usual amount of the dye. Accordingly, Hanner and Whipple suggest that clinically an unexpected increase in the output of dye through the kidney may have some significance, as an unusually high elimination of phenolsulphonphthalein in the urine would suggest an abnormality in the liver. The presence of combined renal and hepatic disease calls for cautious analysis of the renal elimination of phenolsulphonphthalein.

Another unexpected confusion in the use of functional liver tests has recently been reported by Althausen [2] from the University of California Medical School. He found that in certain cases of unmistakable hepatic disease the carbohydrate metabolism-regulating mechanism of the liver was found to be within normal limits, as indicated by the modified dextrose tolerance test, although there was marked retention of rose bengal dye that is normally excreted with the bile. The explanation lies in the circumstance that under certain conditions, such as toxic cirrhosis of the liver, vigorous regeneration of tissue occurs. This suffices to permit the customary utilization of dextrose. On the other hand, owing to a loss of the original structure of the liver in this disease, the new hyperplastic nodules lack connection with bile channels, accounting in this manner for marked impairment in the excretion of dye. Althausen points out that this information makes possible clinical differentiation between toxic cirrhosis of the liver and a number of other conditions, principally portal cirrhosis, by demonstrating in the former normal carbohydrate metabolism and at the same time marked retention of dye.

1. Hanner, J. P., and Whipple, G. H.: The Elimination of Phenolsulphonphthalein by the Kidney, Arch. Int. Med. **48**: 598 (Oct.) 1931.

2. Althausen, T. L.: Functional Aspects of Regenerated Hepatic Tissue, Arch. Int. Med. **48**: 667 (Oct.) 1931.

Current Comment

EMOTIONAL GLYCOSURIA

So much attention is being devoted to the "level" of the blood sugar as an index of normal health or possible bodily disorder that it becomes imperative to learn the variations to which the factor measured may be subject in the ordinary routine of living. The dextrose content of the blood is, of course, markedly affected by the ingestion of carbohydrate food. Even after a long interval has elapsed subsequent to a meal the data secured are somewhat variable. The maximum figure reported by different observers [1] is much the same—about 120 mg. per hundred cubic centimeters of blood; the minimum data vary considerably more and may fall as low as 50 mg. It has long been realized that excitement is one of the influences that tend to mobilize sugar into the circulation. This is supposed to be the effect of epinephrine discharged from the suprarenals through their sympathetic innervation. Corroboratory illustration has been afforded by the recent studies of Edwards, Richards and Dill [2] of Harvard University on Harvard

1. Macleod, J. J. R.: The Sugar of the Blood, Physiol. Rev. **1**: 208 (April) 1921.

2. Edwards, H. T.; Richards, T. K., and Dill, D. B.: Blood Sugar Urine Sugar and Urine Protein in Exercise, Am. J. Physiol. **98**: 352 (Sept.) 1931.

and other athletes. These indicate that hyperglycemia is uncommon in exercise with little or no emotional stress but common in exercise with emotional stress on the football field. In football players it is not much influenced by age within the range of 16 to 22 years, by diet or by mass of spectators. Before the game begins blood sugar is normal, and it appears to reach a peak when the game is half over. At the end of the game blood sugar may be normal while urine sugar is high, indicating that blood sugar has passed through a maximum. Inferentially, if exercise was to continue (as in marathon races) hypoglycemia might result. Emotional glycosuria is therefore an occasional manifestation of healthy persons that must be taken into account in diagnostic examinations of the blood.

FOLLICULAR ANTITOXIN AND THE "REYNALS FACTOR"

Recently certain European writers suggested that an important factor in adult immunity is a nonspecific increase in infantile resistance due to an ontogenetic recapitulation of ancestral immunity, a sort of spontaneous "serologic ripening," at the time of puberty. This speculation is not yet supported by sufficient evidence to warrant its adoption in clinical medicine. It has served a useful purpose, however, in stimulating research in the possible relationships of immunity to sex function. Thus, Imamura [1] has shown that normal ovarian follicular fluid has the heretofore unsuspected property of neutralizing tetanus toxin in vitro and will protect laboratory animals against lethal doses of this toxin. Duran-Reynals of the Rockefeller Institute reports that testicular extract has the remarkable property of enhancing to an extraordinary degree the infectivity of staphylococci [2] and vaccine virus.[3] This observation is confirmed by Pijoan [4] and Hoffman,[5] who find the "Reynals factor" nonspecific in its allergic function. They say that it is equally effective in enhancing the infectivity of all micro-organisms and filtrable viruses thus far tested by them. In their latest report, Hoffman, Parker and Walker [6] find the "Reynals factor" also effective in accelerating the growth of experimental sarcoma in chickens. This allergic action is apparently due to the power of rabbit testicular extract to increase local tissue permeability, with resulting increases or perversions of local lymph formation.[7] This local "Reynals hyperpermeability" persists for at least twenty-four hours.[8] There are certain chronic conditions in which the local application of a nontoxic "permeability hormone" might be of predictable therapeutic value. Thus far, therapeutic studies of the "Reynals permeability factor" have been limited to the experimental therapy of certain chronic ulcers with alleged results sufficiently encouraging to warrant continuation of such studies.[9]

1. Imamura, Toyohachi: Acta med., Kaijo **12**: 249, 1929.
2. Duran-Reynals, F., and Suner-Pi, J.: Compt. rend. Soc. de biol. **99**: 1908 (Jan. 4) 1929.
3. Duran-Reynals: J. Exper. Med. **50**: 327 (Sept.) 1929.
4. Pijoan, M.: J. Exper. Med. **53**: 37 (Jan.) 1931.
5. Hoffman, D. C.: J. Exper. Med. **53**: 42 (Jan.) 1931.
6. Hoffman, D. C.; Parker, F., and Walker, T. T.: Am. Jour. Path. **8**: 523 (Sept.) 1931.
7. Hoffman, D. C., and Duran-Reynals, F.: J. Exper. Med. **53**: 387 (March) 1931.
8. McClean, D.: J. Path. & Bact. **33**: 1045, 1930.
9. Rho, F.: J. Trop. Med. **33**: 103, 1930.

THE ANTISCORBUTIC POTENCY OF SOME CITRUS FRUITS

Certain citrus fruits are now depended on by thousands of persons to supply the antiscorbutic protection that present-day dietary conditions demand. This is particularly true in infancy when pasteurized milk and other foods, notably cereal products, usually compose most of the food intake. Modern studies on vitamins have shown that these essential dietary factors are susceptible to deterioration by various methods of processing and conservation to which our foods nowadays may be subjected in the industries and even in the home. The sources of the vitamins also vary in their yields with respect to the species of plant, the degree of ripeness or maturity, the method of cultivation and perhaps other features. How easy it is to err by making untested generalizations has been shown, for example, in the contrast between the lemon and the lime (Citrus medica var. acida), the latter possessing a definitely lower antiscorbutic activity, although for many years such differences were not appreciated, and lime juice was rated as an antiscorbutic *par excellence*. The sharp division in antiscorbutic activity among closely related fruits is quite striking. Recent studies [1] at the Lister Institute in London on variations in the vitamin C content of oranges picked from the same trees (in Palestine) at different times of the season during two consecutive years, and likewise of grapefruit picked at different times in British Honduras and in South Africa, are therefore of interest. They show that the potency of the juice as an antiscorbutic is the same whether the orange or grapefruit is picked at the beginning or at the end of the season. There is no marked loss in the vitamin content when the fruit is stored under ordinary conditions at about 15 C. for about two months. Furthermore, the conditions of cultivation, origin of the stock, age of the trees, and the soil apparently do not materially modify the vitamin C content of the fruit. This information is satisfying in indicating the dependence that may apparently be placed on some of the most widely used antiscorbutic foods regardless of their agricultural history.

1. Bracewell, M. F., and Zilva, S. S.: Vitamin C in the Orange and the Grapefruit, Biochem. J. **25**: 1081, 1931.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday, Wednesday and Friday from 2:25 to 2:30 p. m. over Station WBBM (770 kilocycles, or 389.4 meters) and other stations of the Columbia Broadcasting System.

The program for the week is as follows:

January 25. Athlete's Foot.
January 27. The Sniffle Stage of Disease.
January 29. Our Changing Conceptions of Health Work.

There is also a fifteen minute health talk broadcast over Station WBBM, Chicago, on Saturday morning, from 11:15 to 11:30.

The program for the week is as follows:

January 30. Rickets.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News.—The Los Angeles County Medical Association was addressed, January 7, by Drs. Philip J. Murphy, on "Diagnosis and Surgical Judgment in Acute Abdominal Pain"; Henry B. Lemere, "The Adenoid and Immunity," and William A. Swim, "Head Injuries: Diagnosis and Management."——At the meeting of the Los Angeles Surgical Society, January 8, the speakers were Drs. Harry W. Martin, "Cysto-Urethroscopic Resection of the Prostate"; Isaac J. Vidgoff, "Intestinal Obstruction Due to Gallstones," and Silas A. Lewis, "Inguinal Hernia with Unusual Findings."——The Alameda County Medical Association was addressed in Oakland, January 18, by Drs. Thomas Floyd Bell on "Trichomonas Vaginalis"; Robert S. Leet, "Infantile Scurvy," and Daniel Crosby, "Medical Economics."

"Dr." Osman Calls on California Physicians.—"Dr. E. Osman," or "Osmun," who claims to be a doctor of medicine, has been calling on physicians throughout the state, posing as a representative of various insurance companies. He states that he has been delegated to select a medical examiner in each town, his reimbursement consisting of $1 for each specimen of urine sent to the San Diego Laboratories. However, each examiner selected by him is charged a fee for "form blanks and containers for urine." "The American Institute of Life Research Inc." is the name noted on the receipt which Osman leaves with the physician after receiving about $3.50, which, he claims, is the fee charged for the blanks and containers. One physician reporting the man stated that he claimed to be a "graduate of Columbia University Medical College some thirty years ago." The Alumni Federation of Columbia University states that it has no record of a "Dr. E. Osmun." There is no record in the files of the American Medical Association of such a person.

Sale of Bacteria Prohibited in San Francisco.—A regulation recently passed by the department of health of San Francisco provides that it shall be unlawful for any person, firm, association or corporation within the limits of the city and county of San Francisco to manufacture, import, offer for sale, sell or distribute, or use any living culture or preparation of bacteria, or of any other group of micro-organisms potentially dangerous to man, for the purpose of destroying rats, other rodents or vermin. According to Dr. Jacob C. Geiger, director of health, the regulation as passed was based on three large outbreaks of food poisoning, two of which were in hospitals. Apparently, the three outbreaks were due to B. enteritidis, B. paratyphosus B (aertrycke), and B. paratyphosus A, respectively. In one outbreak, when thirty-five cases were reported out of sixty people in attendance at a banquet, incompletely cooked veal was considered as the source of the poisoning. One hospital outbreak involved the poisoning of more than 200 persons. Investigation disclosed that it was probably due to a rice pudding which yielded an organism identified as B. paratyphosus B (aertrycke type). Fifty-two persons were involved in the second hospital outbreak. One patient, alleged to have suffered from chronic myocarditis and under treatment for syphilis, died. The report stated that this outbreak of food poisoning was apparently due to B. paratyphosus A, consumed in an egg souffle-shrimp-pea mixture with ample time for incubation and contaminated by a human carrier, the assistant chef. In each of these outbreaks it was suspected that a bacteriologic rat virus, used for the extermination of rats on the premises where the food was prepared, was the source of the micro-organisms, although definite evidence was not obtainable. The report can be obtained from the Superintendent of Documents, Washington, D. C.

COLORADO

License Revoked.—At a meeting of the Colorado State Board of Medical Examiners, January 5-6, the license to practice medicine in the state of Dr. Benjamin F. Replogle, Fort Collins, was revoked on a charge of unprofessional conduct. According to the state board, Dr. Replogle has been an abortionist for many years. His license was revoked, July 2, 1929, on a charge of abortion, and renewed at the April 1, 1930, meeting of the board.

Medicolegal Digest.—The Colorado State Medical Society has recently published the first edition of a medicolegal digest, in accordance with a resolution adopted by the house of delegates at the sixtieth annual session in Pueblo in 1930. It will be published biennially and sell publicly at $10 a copy. The chapters of the first issue are on the medical practice act, public health, narcotics, alcoholic liquor, malpractice, poor relief, income tax, miscellaneous laws and regulations, governmental officials, hospital facilities, the Colorado State Medical Society, and membership directory.

Health at Denver.—Telegraphic reports to the U. S. Department of Commerce from eighty-three cities, with a total population of 36 million, for the week ended January 9, indicate that the highest mortality rate (24.7) appeared for Denver, and the rate for the group of cities as a whole, 13. The mortality rate for Denver for the corresponding week last year was 16.4, and for the group of cities, 14.1. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have a large Negro population, may tend to increase the death rate.

Society News.—Dr. Elmer L. Timmons addressed a recent meeting of the Fremont County Medical Society at Florence on "Medical Care of Children," and Dr. William P. McCrossin, Jr., Colorado Springs, "Treatment of Sterility in Women."——The Northeast Colorado Medical Society was addressed at Sterling, Dec. 10, 1931, by Dr. Edward P. Hummel, Sterling, on "Management of the Sick Infant."——At the meeting of the Pueblo County Medical Society, Dec. 15, 1931, Dr. Walter C. Chaney, Pueblo, spoke on "Gastro-Intestinal Tract Radiologically Considered."——Dr. William E. Buck, Pueblo, talked on food poisoning, Dec. 2, 1931, before the Pueblo Public Health Association.——The program of the Boulder County Medical Society, January 14, in Boulder, consisted of two case reports by Drs. Claude D. Bonham and Oscar M. Gilbert, on chronic leukemia and ruptured heart, respectively.——Dr. Henry E. Sigerist of the University of Leipzig addressed the Medical Society of the City and County of Denver, January 6, on "Medicine of the Renaissance."

ILLINOIS

License Revoked.—The state department of registration and education, Springfield, revoked the license of Dr. Dorman E. E. Haley, Peoria, Dec. 16, 1931. The charge on which the revocation was based is "professional connection or association with, or lending one's name to another for the illegal practice by another of the treatment of human ailments as a business, or professional connection or association with a person holding himself out in a manner contrary to the medical practice act."

Meetings on Undulant Fever.—A series of luncheon meetings are being held by veterinarians in five different cities of the state during January and February to discuss diseases of cattle and of poultry. Dr. Andy Hall, state health director, is scheduled to address the sessions on undulant fever. Physicians are invited to attend these conferences, of which the next will be held in Decatur, January 26. A conference will be held in Peoria, February 3, at the Jefferson Hotel. Previous conferences were held in Aurora, January 5; Urbana, January 13, and Centralia, January 19.

Society News.—Major Lanphear W. Webb, Jr., Chicago, presented "Medical Aspects of Chemical Warfare and Demonstration of Gas Apparatus" before the Peoria City Medical Society, January 12.——Dr. Edward J. Stieglitz, Chicago, addressed the Will-Grundy County Medical Society, January 20, on "Certain Aspects of Arterial Hypertension." Dr. Géza de Takats, Chicago, addressed the society recently on "The Value of Ambulatory Vein Ligations in the Treatment of Varicose Veins."——Dr. Marion L. Klinefelter, St. Louis, addressed the Madison County Medical Society, January 8, on fractures.

Chicago

Dr. Hadley to Give Hektoen Lecture.—Philip B. Hadley, Ph.D., associate professor of bacteriology, University of Michigan Medical School, Ann Arbor, will give the eighth Ludvig Hektoen lecture of the Frank Billings Foundation at the City Club, March 25, on "New Trends in Medical Bacteriology and Immunology."

Dr. Allison Resigns.—Dr. Nathaniel Allison has resigned as professor of orthopedic surgery in the department of surgery at the University of Chicago, on account of ill health. Dr. Allison, since his arrival at the university in April, 1930, has organized the division of orthopedic surgery. He has been appointed a nonresident professor and consulting surgeon in the department.

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Society News.—The Chicago Neurological Society was addressed, January 21, among others, by Dr. Eric Oldberg on "Indications for Chordotomy."——The Chicago Society of Internal Medicine will be addressed, January 25, by Drs. Willard O. Thompson on "Cerebrospinal Fluid in Myxedema and in Exophthalmic Goiter"; Edmund Andrews, "Chemical Mechanism of Gallstone Formation," and William S. Boikan, "Myocarditis Permiciosa."——The Chicago Gynecological Society was addressed, January 15, by Drs. Maurice A. Schnitker, Paul C. Hodges and Frank E. Whitacre on "X-Ray Evidence of Fetal Death."——Dr. William L. Benedict, Rochester, Minn., talked on "Orbital Tumors" before the Chicago Ophthalmological Society, January 18.——At the meeting of the Chicago Society of Allergy, January 18, the speakers were Drs. Meyer R. Lichtenstein on "Potency of Ragweed Extracts"; Leon Unger, "Perennial vs. Preseasonal Hay Fever Treatment," and Samuel M. Feinberg, "A Scheme for Evaluation of Hay Fever Results."——Dr. Paul L. Schroeder, among others, spoke on "The Work of the Division of the Criminologist and the Institute for Juvenile Research," January 14, before the Chicago Academy of Criminology.

INDIANA

Society News.—Nathan Sinai, Dr.P.H., Ann Arbor, Mich., addressed the Indianapolis Medical Society, January 12, on "The Way of Health Insurance." The society was addressed, January 19, by Drs. Gerald W. Gustafson and Horace M. Banks on "The Hormone Test for Pregnancy," and Dr. Karl R. Ruddell, "Diverticulitis of the Sigmoid Colon." The January 26 meeting will be held jointly with the staff of the Indiana University School of Medicine Hospitals.——A symposium on nonsurgical treatment of the thyroid featured the January 8 meeting of the Hancock County Medical Society; Drs. Charles R. Sowder and Ralph L. Lochry, Indianapolis, were the speakers.——Dr. Cova R. Graham, Bourbon, addressed the Marshall County Medical Society at Plymouth, January 6, on "Heart Diseases: Specific Reference to Fibrillation and Flutter."——Dr. Frank A. Brayton, Indianapolis, discussed "athletic foot" before the Huntington County Medical Society, January 5, at Huntington.——At the meeting of the Jay County Medical Society, January 8, Dr. Henry O. Mertz, Indianapolis, spoke on "Tumors of the Kidney."——The Hamilton County Medical Society was addressed, Dec. 8, 1931, at Noblesville, on malignant conditions.——Dr. Granville S. Hanes, Louisville, Ky., spoke on "Injection Treatments of Hemorrhoid and Toxin Backache" before the Ripley County Medical Society in Osgood, January 6.——Dr. William W. Weaver, New Albany, addressed the Floyd County Medical Society, January 8, on "Acute Rhinitis."——The Rush County Medical Society was addressed at Rushville, Dec. 7, 1931, by Dr. Robert M. Dearmin, Indianapolis, on "Complications of Ear, Nose and Throat Diseases." The society was addressed, January 4, by Dr. Murray N. Hadley, Indianapolis, on "Tissue Healing."——At the January 7 meeting of the Shelby County Medical Society, Shelbyville, Drs. Edgar F. Kiser and Larue D. Carter, Indianapolis, spoke on "Respiratory Infection" and "Epidemic Meningitis," respectively.——Dr. Russell W. Wood, Oakland City, addressed the Gibson County Medical Society at Princeton, January 11, on "Treatment of Varicose Veins by the Injection Method."

KANSAS

Personal.—Dr. Earle G. Brown, Topeka, secretary and executive officer of the Kansas State Board of Health, was elected editor of the *Journal of the Kansas Medical Society* at the January meeting. Dr. Brown succeeds the late Dr. William E. McVey.——Dr. Dennis E. Singleton was recently appointed chief psychiatrist for the U. S. Public Health Service at the penitentiary at Leavenworth.

KENTUCKY

Bill Introduced.—H. 21 proposes to make it unlawful for public school authorities to permit any minor pupil or student to be subjected to either a medical or a physical examination over the objections of the person or persons having legal custody of such minors.

MASSACHUSETTS

Dr. Magrath Appointed Professor of Legal Medicine.—Dr. George Burgess Magrath, Boston, medical examiner for Suffolk County, is the first incumbent of a new chair of legal medicine at Harvard University Medical School, it is reported. Announcement of his appointment to full professorship was made on Dr. Magrath's twenty-fifth anniversary of service in his county medical post, January 16. The new chair was established with a gift of Mrs. Frances Glessner Lee, Littleton, N. H., to support a resident professor of legal medicine and to provide for one or more lectures by visitors each year. According to the report, the gift also provides a plan to accumulate at the medical school a file of cases on legal medicine. Dr. Magrath will give six lectures at Lowell Institute beginning February 6, on "Medicine in Some of Its Relations to Law."

Bills Introduced.—S. 103, to amend the workmen's compensation act, proposes that an employee, to receive compensation for a hernia, must prove (1) that it resulted from an accidental injury accompanied by evidences of pain, (2) that inability to work commenced within seven days after the accident causing the hernia, (3) that he had not previously had a hernia, and (4) that within fourteen days after such accident the facts thereof were communicated to the employer. S. 35 seeks to amend that section of the medical practice act setting forth the necessary qualifications for membership on the board of registration in medicine by proposing (1) that all members be registered as qualified physicians under the Massachusetts law and (2) to omit that provision of the present law specifically stating that members be graduates of a legally chartered medical college or university, since if a person is registered as a qualified physician in Massachusetts, it is necessarily implied that he is a graduate of such a college or university. H. 19 proposes to require all asylums, hospitals, orphanages and schools, having more than ten inmates located above the first floor, to be equipped with fire alarm boxes, if such institutions are located in a fire district having a general fire alarm station. H. 60 proposes to authorize the department of public health to establish and maintain cancer clinics in such parts of the commonwealth as it may deem most advantageous. H. 67 proposes to direct the department of public health to provide for the care and treatment of persons suffering from rheumatism and kindred ailments. H. 143 proposes to amend the law requiring the annual licensing of maternity hospitals by requiring such institutions to pay an annual license fee of $5. H. 203 proposes to authorize the Middlesex College of Medicine and Surgery to confer the degree of Doctor of Dental Medicine. H. 221 proposes to prohibit the dispensing of physicians' prescriptions except by (1) registered pharmacists, (2) assistant registered pharmacists, (3) apprentices working under the supervision of registered pharmacists or assistant registered pharmacists, or (4) physicians "in an emergency, at the bedside, under the same conditions as pertain to the administration of narcotics, and in towns and villages in which there is no store with a registered pharmacist in attendance." This bill also proposes to prohibit a pharmacist from changing a prescription or substituting other ingredients for those specified, except with the knowledge and consent of the prescribing physician. H. 262 proposes to authorize the state department of public health to license health officers and to require such licensure of all persons acting as local health officers, or as executives or agents of the board of health of any town or city having a population of 10,000 or more. H. 322, to amend the workmen's compensation act, proposes that in the case of an aggravation of a disease existing prior to an industrial injury, compensation shall be allowed only for such proportion of the disability due to the aggravation of such prior disease as may reasonably be attributed to the injury.

MICHIGAN

Personal.—A dinner honoring Dr. Richard R. Smith, regent of the University of Michigan, was held, January 14, in the Pantlind Hotel, Grand Rapids.——Dr. John L. Lavan, Toledo, Ohio, has been named health officer of Kalamazoo to succeed Dr. Alvin H. Rockwell, resigned.

Dr. Lewis Gives Beaumont Lectures.—Howard Bishop Lewis, Ph.D., professor of physiologic chemistry, University of Michigan School of Medicine, Ann Arbor, will give the annual Beaumont lectures, January 25-26, on "Rôle of Amino-Acids in the Animal Organism." The individual lectures were "Cystinuria and Cystine Calculi, a Surgical and Medical Problem," and "The Physiology of the Amino-Acids." The lectures are given under the auspices of the Wayne County Medical Society.

Dr. Patterson Wins Award.—Thomas L. Patterson, Ph.D., professor of physiology at the Detroit College of Medicine and Surgery, has received a prize of $250 from the New York Academy of Science for his paper on "The Comparative Physiology of the Gastric Hunger Mechanism." This prize, called the A. A. Cressy Morrison Award, is given for the most acceptable paper on experimental biology embodying original research not previously published, according to the bulletin of the Wayne County Medical Society.

Good Health Week.—A symposium on health building and disease control featured the opening of "good health week" in Ypsilanti, January 4. The speakers in the symposium included

Drs. John A. Wessinger, health officer of Ann Arbor, and Matthew E. Soller and James D. Bruce, Ann Arbor; David N. Robb, health officer of Ypsilanti, presided. The program carried out during the week consisted of lectures, demonstrations and exhibits. This is said to have been the first observance of "good health week" in Washtenaw County.

Society News.—Dr. Frederick C. Warnshuis, Grand Rapids, was elected secretary of the Michigan State Medical Society for the twentieth year at the midwinter session of the council, January 8; Dr. Aaron V. Wenger, Grand Rapids, was elected treasurer to succeed Dr. John R. Rogers, resigned, and Dr. James H. Dempster, Detroit, was reelected editor.——Dr. Roy G. Hoskins, Boston, addressed the medical section of the Wayne County Medical Society, January 12, on endocrine therapy. The program of the society's January 19 meeting was under the auspices of the East Side Medical Society; the speakers were Drs. Alfred H. Whittaker, "Surgical Indication in Splenomegaly"; Louis D. Stern, "Important Points in the Diagnosis of Certain Anemias"; Harry L. Clark, "Laboratory Procedures Involved in the Study of Certain Anemias"; Daniel J. Leithauser, Grosse Pointe Park, "New Technic for Skin Graft," and Ledru O. Geib, "Public Health Program Originated in the East Side Medical Society."——Dr. Harry W. Plaggemeyer, Detroit, will give a lecture before the Highland Park Physicians Club, February 4, entitled "Behind the Scenes."——Dr. James M. Robb, Detroit, addressed the Kent County Medical Society, Grand Rapids, January 14, on "Rise of Specialism." He also addressed the Monroe County Medical Society, January 21, on "Medical Economics and State Medicine."——Dr. Francis E. Senear, Chicago, addressed a joint meeting of the Wayne County Medical Society and the Detroit Dermatological Society, January 5, on "Tuberculosis of the Skin."

MISSISSIPPI

Bills Introduced.—S. 20 proposes to require all hospitals to use Negro nurses on Negro patients, white nurses on white patients, and male nurses in all male syphilitic cases. H. 16 proposes to require that, when persons accused of crime are acquitted by juries on the ground of insanity, the juries state that fact in their verdicts and state whether the accused has since been restored to reason and whether he is dangerous to the community. If a jury certifies that the accused is still insane and dangerous to the community, the judge is to order that he be confined in one of the state asylums for the insane.

Society News.—A symposium on syphilis featured the meeting of the Issaquena-Sharkey-Warren Counties Medical Society, January 12; the speakers were Drs. William G. Weston, Edley H. Jones and William E. Akin, Jr.; Drs. Sydney W. and Walter E. Johnston showed a moving picture on peptic ulcer. All the speakers were from Vicksburg.——The Jackson County Medical Society was addressed, Dec. 7, 1931, by Dr. Julius E. Beck, Mobile, Ala., on "Cirrhosis of the Liver."——Dr. Bryant J. Hewitt, McComb, addressed the Pike County Medical Society, Dec. 3, 1931, on "The Midwife Problem."——Among others, the Northeast Mississippi Thirteen County Medical Society was addressed, Dec. 15, 1931, by Drs. Charles B. McCown, Gibson, and M. Q. Ewing, Amory, on "Vomiting of Pregnancy" and "Surgical Dilemmas," respectively.

NEBRASKA

Society News.—Drs. William Thalhimer and Max Cutler, Chicago, addressed the Omaha-Douglas County Medical Society, January 12, on "Present Status of Treatment of Poliomyelitis" and "Recent Advances in Diagnosis and Treatment of Cancer," respectively.——Dr. Alexis F. Hartmann, St. Louis, addressed the Lancaster County Medical Society, Dec. 1, 1931, on "Parenteral Fluid Administration for the Relief of Dehydration and Changes in the Acid-Base Balance."——Dr. Roscoe L. Smith, Lincoln, among others, addressed the Fillmore-Saline Counties Medical Society, Tobias, Dec. 2, 1931, on "Radiation Treatment of Uterine Lesions."——Dr. Ernest W. Hancock, Lincoln, among other speakers, presented a paper on "Serums and Antitoxins in the Treatment of Disease" before the Cass County Medical Society at Weeping Water, Dec. 8, 1931.

NEW YORK

Bill Introduced.—S. 11 proposes to require all hospital authorities to finger-print, tag and keep in separate receptacles all new-born babies, and proposes to authorize a civil penalty of $10,000, collectible from hospital authorities allowing one baby to be exchanged for another.

Analysis of Report of Governor's Health Commission.—A special committee appointed by the house of delegates of the Medical Society of the State of New York to study the report of the governor's special health commission issued in February, 1931, has just presented its report. The committee, of which Dr. Thomas P. Farmer, Syracuse, was chairman, was especially concerned with the portion of the commission's report which recommended the establishment of county health units (THE JOURNAL, April 4, 1931, p. 1153). Eight meetings were held by the committee, of which four were devoted to hearings for members of the governor's commission, representatives of county medical societies and others especially invited. As a result, the committee declared that it is in accord with the recommendation for the establishment of county health units, but suggested that the mandatory provision be deferred. It was found that several counties were on the point of developing health units under the permissive legislation now in force; members of the committee thought these should be allowed to work out their plans in advance of any mandatory procedure. It was also pointed out that in the present period of financial depression it might be temporarily unwise to encourage any legislation that would place added burdens on the taxpayers. The committee made plain, however, that there appeared to be no reason why a measure which has to do with public health should not have the force given it by a mandate. In its consideration of other sections of the report, the committee registered its opposition to the principle of treatment of nonindigent persons by public authorities in connection with the control of venereal disease. It was of the opinion that the recommendation of the commission extending the schedule of occupational diseases "to include all diseases arising out of employment and giving authority to make awards in cases of such occupational disease when it is established that the particular disability arose out of employment" needs clarification and further study by a commission.

New York City

Hospitals Bar Noncitizen Nurses.—Dr. John G. William Greeff, commissioner of hospitals, issued an order, Dec. 23, 1931, specifying that only citizens and applicants for citizenship would henceforth be employed in the nursing service of city hospitals. The order applies to 3,629 nurses, student nurses and attendants. About 370 of the 1,882 graduate nurses employed are not citizens, but 284 of them have applied for naturalization papers, it was said.

Anniversary Dinner.—The New York Post-Graduate Medical School and Hospital will celebrate the fiftieth anniversary of its founding at a dinner of the faculty association, January 30. The speakers are to be Nicholas Murray Butler, LL.D., president of Columbia University; Dr. Ray Lyman Wilbur, secretary of the interior, Washington, D. C., and George H. Meeker, Ph.D., dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia.

Psychiatric Clinic Opened.—A psychiatric clinic as an adjunct to the court of general sessions was opened, Dec. 23, 1931. Dr. Menas S. Gregory, director of the division of psychiatry in the department of hospitals, will be in charge until the clinic is well organized. The ceremony was held in the criminal courts building with Mayor Walker, Judge Cornelius F. Collins and Dr. Gregory as speakers. The purpose of the clinic is the examination of defective prisoners, the gathering of practical data on the make-up of persons who come into the courts of crime as to the psychiatric, clinical and psychologic factors in their personalities.

Committee to Study Childhood Tuberculosis.—Dr. Shirley Wynne, city health commissioner, has appointed a committee of nine physicians to formulate a program of practicable measures to be taken by the department of health in a campaign against childhood tuberculosis. The topics to be considered by this committee are listed as follows:

1. What is clinical tuberculosis in childhood?
2. How is the diagnosis of pulmonary tuberculosis established in childhood?
3. Tuberculin in diagnosis of tuberculosis.
4. X-ray examination.
5. A clinical classification of pulmonary tuberculosis in childhood.
6. Vaccination against tuberculosis.
7. The clinic for tuberculosis in children; its purpose if adult tuberculosis is an exogenous reinfection.
8. Therapy, its indications and aims.
9. The role of the preventorium in dealing with tuberculosis.
10. Hospital facilities for the care of tuberculous children.

The personnel of the committee is as follows: Drs. George G. Ornstein, James Burns Amberson, Jr., Margaret S. Witter Barnard, Wolfgang Grethmann, Harry E. Kleinschmidt, Dwight Clifford Martin, William H. Park, Béla Schick and Charles Hendee Smith.

Society News.—Dr. William Linder gave his inaugural address as president of the Medical Society of the County of Kings, January 19, on "Medicine Besieged." William King Gregory, Ph.D., professor of vertebrate paleontology, Columbia University, also made an address, "Concerning the Pedigree of

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Man."——Dr. Frank H. Lahey, Boston, will address the East New York Medical Society, Brooklyn, January 25, on "Management of Patients with Extreme Atypical Hyperthyroidism."——Dr. Allen O. Whipple addressed the New York Surgical Society, January 13, on "Complications of Abdominal Perineal Resection of the Rectum."——Dr. Lucy D. P. Sutton, among others, addressed the Women's Medical Association of New York City, January 13, on "Treatment of Chorea by the Induction of Fever."——Dr. David Perla, among others, addressed the Bronx Pathological Society, January 19, on "Disturbances of Lipoid Metabolism."

Psittacosis.—Three cases of psittacosis traced to a pet shop were reported to the department of health in November. In two cases the infection was apparently transmitted by parrots. In the first case a parrot which had been in the patient's family for twenty years was taken to the pet shop because of illness. It remained ill after being taken home and was returned to the shop, October 31. The patient became ill, October 29, and later died. When the parrot was examined at the Rockefeller Institute for Medical Research, it was found to be infected with psittacosis. The parrot in the second case was boarded at the pet shop for several months and taken home about November 1. The bird became ill a day or two later and died. The patient became ill, November 7, and recovered. The third case was in an attendant at the pet shop. Investigation showed that the shop had received a shipment of parakeets from San Francisco in September. During October about twelve of the birds died and about forty were sold. The remainder were sent to the Rockefeller Institute and a number showed psittacosis infection.

Hospital News.—The New York Polyclinic Medical School and Hospital has recently opened additional clinics in obstetrics and in allergy in order to handle the increased number of patients.——Two courses on medical ophthalmology are being given at Mount Sinai Hospital by Dr. Julius Wolff on Wednesdays and Fridays, to last for eight weeks. A twelve weeks' course in roentgen-ray interpretation of diseases of the gastrointestinal tract was begun, January 7, by Dr. Samuel J. Goldfarb; the course is given four hours a week.——Dr. Smiley Blanton has opened a speech clinic at the Post-Graduate Hospital to treat stuttering, stammering and delayed or indistinct speech in children.——The Harlem Eye and Ear Hospital celebrated its fiftieth anniversary, Dec. 29, 1931.——Montefiore Hospital will close its school of nursing in February. Thirty-seven students who are to graduate in March will continue with the hospital until that time and the remainder of the ninety-seven students will be transferred to other institutions.——Dr. Chevalier L. Jackson, Philadelphia, among others, will address the stated meeting of the clinical society of the New York Polyclinic Medical School and Hospital, February 1, on esophageal stenosis.

OHIO

Personal.—Dr. Edgar L. Vermilya was recently elected health commissioner of Fremont for his twenty-third year.——Dr. Harry G. Sloan has been elected president of the Cleveland Academy of Medicine.——Dr. Byron E. Neiswander, Columbus, was appointed health commissioner of Franklin County, January 1.——Dr. Francis M. Teeple, Fremont, was recently appointed health officer of Sandusky County.

Child Health Conference.—The Ohio follow up of the White House Conference on Child Health and Protection was held, January 21-22, at Columbus at the call of Gov. George White. Honorary chairmen who presided at the sessions were Dr. John H. J. Upham, Columbus, representing the section on child health; John Eisenhauer, superintendent, Cleveland Boys' Farm, the section on child welfare; Charles S. Berry, Ph.D., director of the bureau of special education and professor of psychology, Ohio State University, Columbus, the section on child education.

Cincinnati Adopts Preceptor System.—At a meeting, Dec. 16, 1931, the faculty of the University of Cincinnati College of Medicine decided to initiate a system of preceptorships for students, at the suggestion of Dr. Arthur C. Bachmeyer, dean. Preceptors have already been appointed for members of the freshman class to serve for the students throughout their terms in college. Arrangements will be made within a short time for assignments of preceptors for other undergraduates. Students in the fifth year class have been under preceptorial advisers for several years.

Society News.—Dr. Elliott P. Joslin, Boston, will address the Academy of Medicine of Cincinnati, January 25, on "Insulin Reaction."——Drs. Edward D. King and Derrick T. Vail, Jr., will address the Cincinnati Oto-Laryngological Society, January 26, on "Rhinologic Aspects of Tear-Sac Surgery" and "Ophthalmologic Aspects of Tear-Sac Surgery," respectively.——Dr. John T. Quirk, Piqua, addressed the Shelby County Medical Society, Sidney, Dec. 4, 1931, on coronary thrombosis.——Dr. Miles Porter, Jr., Fort Wayne, Ind., spoke on epidemic encephalitis before the Van Wert County Medical Society, Van Wert, Dec. 1, 1931.——The Ashtabula County Medical Society heard a paper on abscess of the lung presented by Dr. Richard Dexter, Cleveland, at a meeting in Geneva, Dec. 10, 1931.——Dr. William B. Andrews, Kent, presented a paper on "Collections and Financial Management in Private Practice," before the Portage County Medical Society, Ravenna, Dec. 3, 1931.——Dr. Alexander T. Bunts, Cleveland, addressed the Wayne County Medical Society, Wooster, Dec. 8, 1931, on "Diagnosis of Spinal Cord Tumors."——Dr. Irving S. Cutter, Chicago, was the guest speaker at the annual meeting of the Columbus Academy of Medicine, Dec. 14, 1931; his subject was puerperal fever.——Dr. John Dudley Dunham, Columbus, addressed the Athens County Medical Society, Athens, January 4, on diseases of the esophagus.——Drs. Charles B. Lakoff and Solomon G. Meyers, Detroit, addressed the Four-County Medical Society (Fulton, Henry, Defiance and Williams counties), January 7, on acute diseases of the abdomen and interpretation of gastric symptoms, respectively.

PENNSYLVANIA

Society News.—At a meeting of the Allegheny County Medical Society, Pittsburgh, January 19, Drs. Frederick B. Utley and Lyndon H. Landon discussed diseases of the thyroid gland, and Dr. Edward E. Mayer, the psychology of the criminal.——Dr. Earl Vandegrift, among others, addressed the Pittsburgh Academy of Medicine, January 12, on "Coccidioides Immitis."——At a meeting of the Pittsburgh Urological Association, January 11, speakers were as follows: Drs. David H. Ruben, "Treatment of Ureteral Calculi"; William J. L. McCullough, "Differential Diagnosis Between Urinary Calculi and Other Abdominal Conditions," and Clarence J. McCullough, Washington, "Roentgenographic Differentiation of Urinary Calculi."——The Lycoming County Medical Society held its annual banquet at Williamsport, January 8, with Dr. William Rowland Davies, Scranton, as the principal speaker, on "Looking at Both Sides of Our Public Relations." Drs. Maurice C. Pincoffs and Sydney R. Miller, Baltimore, addressed the scientific meeting on "Onsets of Cardiac Decompensation in Elderly Patients" and "Dangers of Credulity in Both Diagnosis and Treatment and the Need for the More Intelligent Exercise of Skepticism," respectively.

Philadelphia

Gerhard Medal Awarded.—The William Wood Gerhard Gold Medal of the Pathological Society of Philadelphia was awarded to Alfred N. Richards, Sc.D., professor of pharmacology, University of Pennsylvania School of Medicine, at a meeting, January 14. Dr. Richards addressed the meeting on "Recent Developments in the Experimental Study of the Function of the Kidney."

Society News.—The meeting of the Philadelphia County Medical Society, January 27, will be devoted to discussions of preventive medicine, with speakers as follows: Drs. George E. Pfahler, on cancer, Edward A. Strecker, mental disorders; Alfred Stengel, arteriosclerosis; James E. Talley, heart disease, and Edward Weiss, kidney disease. Dr. Ralph Tyson gave the weekly postgraduate seminar of the society, January 22, on "Infant Feeding—Modern Conceptions and Practices."——Dr. Joseph McIver delivered the annual presidential address of the Philadelphia Neurological Society, January 21, on "Sequelae to Head Injuries."——Dr. Wilmer Krusen gave the first of a series of popular science lectures sponsored by the Philadelphia College of Pharmacy and Science, January 20, on "Triumphs of Medicine."

SOUTH CAROLINA

Society News.—The Marlboro County Medical Society held its annual meeting and banquet at Bennettsville, January 13. Among the speakers were Drs. Charles A. Mobley, Orangeburg, president of the South Carolina Medical Association, on "Intestinal Obstruction"; Thomas Dewey Davis, Richmond, "Anemia with Special Reference to the Hypochromic Type," and Claude C. Coleman, Richmond, "Diagnostic Problems in Certain Neurosurgical Conditions of the Brain."

TEXAS

University News.—A new hospital for nervous and mental diseases has recently been built at a cost of $150,000 in affiliation with the University of Texas School of Medicine. Dr. Titus H. Harris, professor of neurology and psychiatry, is clinical director of the institution, which has fifty-four beds.

Personal.—Meyer Bodansky, Ph.D., professor of pathologic chemistry and director of the John Sealy Memorial Laboratory, University of Texas School of Medicine, Galveston, has been granted a leave of absence to spend six months as visiting professor in biologic chemistry at the University of Beirut, Syria, for the first semester of the school year 1932-1933.

Society News.—Dr. William D. Jones, Dallas, was elected president of the Texas Ophthalmological and Otolaryngological Society, at its annual convention in San Antonio, December 11-12. Among speakers at the meeting were Drs. Thomas E. Carmody, Denver, on osteomyelitis of the bones of the face and skull, and Wiley R. Buffington, New Orleans, glaucoma. ——The Dallas Southern Clinical Society will hold its annual meeting, March 28-April 1. Preliminary announcement of speakers includes Drs. Frank H. Lahey, Boston, on the thyroid gland; Joseph Collins, New York, "How Can We Stem the Rising Tide of Insanity in This Country?"; Thomas McCrae, Philadelphia, John Shelton Horsley, Richmond, and Merrill C. Sosman, Boston, in a symposium on diseases of the biliary tract; John A. Kolmer, Philadelphia, leader of a symposium on arthritis, and Edward H. Richardson, Baltimore, a symposium on conservation of maternal health.

UTAH

Society News.—The Salt Lake County Medical Society has established a medical service bureau to act in cooperation with other agencies in investigating and correlating medical needs for the indigent during the present winter. Dr. Louis E. Viko is chairman of the committee in charge. Dr. Rosco G. Leland, Chicago, addressed the society in October on the work of the Bureau of Medical Economics of the American Medical Association.

VIRGINIA

Society News.—Dr. Temple S. Fay, Philadelphia, addressed the Southside Virginia Medical Association in Petersburg, Dec. 8, 1931, on "Care and Treatment of Head Injuries."——Mr. A. A. Shanks, director of the branch state laboratory, Nassawadox, presented a paper on laboratory diagnosis of diphtheria before the Northampton County Medical Society, Nassawadox, Dec. 16, 1931.——Drs. Isaac A. Bigger and Harry Hudnall Ware, Jr., Richmond, among others, will address the Mid-Tidewater Medical Society, West Point, January 26, on "Infections of the Hand and Forearm" and "Observations on the Rabbit Ovulation Test for Pregnancy," respectively.

GENERAL

Conference on Tuberculosis.—Final arrangements for the eighth international conference on tuberculosis, which will be held at The Hague and Amsterdam, September 7-9, have recently been completed. Reports are to be made by ten selected speakers on three subjects, followed by free discussion. A speaker from the United States is included in the group for each subject: Drs. William Charles White, Washington, D. C., on "Relationship Between Allergy and Immunity"; James Burns Amberson, Jr., New York, "Gold Therapy," and Harry A. Pattison, Livingston, N. Y., "After-Care Schemes for the Tuberculous."

Report of Ella Sachs Plotz Foundation.—Twenty-six grants for research in medicine and surgery were made during 1931 by the Ella Sachs Plotz Foundation. Nineteen of these were made to scientists outside the United States. Following a policy of recent years, the foundation directed its aid in large measure toward the solution of a single problem. Eight of the investigations financed bear on nephritis. Other general subjects favored are internal secretion and infection. Applications for grants for the year 1931-1932 should be in the hands of the executive committee before May 1. They should be sent to Dr. Joseph C. Aub, Collis P. Huntington Memorial Hospital, 695 Huntington Avenue, Boston, Mass.

Speidel Wins American Association Award.—Carl Caskey Speidel, Ph.D., associate professor of anatomy, University of Virginia Department of Medicine, Charlottesville, received the $1,000 prize awarded annually by the American Association for the Advancement of Science, at the close of the association meeting in New Orleans, January 1, in recognition of his work on the growth of nerves. According to the committee on award, Professor Speidel "has proved once and for all that the nerves do not grow as a result of cells forming a chain, but that each nerve grows out of a single cell in a central nervous system. This establishes the 'outgrowth theory' of nerves as opposed to the chain theory." Dr. Speidel received the Ph.B. degree from Lafayette College in 1914 and the Ph.D. degree from Princeton University in 1918. He has held his present professorship since 1922.

Society News.—Dr. Robert S. Cathcart, Charleston, S. C., was elected president of the Southern Surgical Association at the annual meeting at White Sulphur Springs, W. Va., Dec. 8-10, 1931. Dr. William J. Mayo, Rochester, Minn., was the speaker at the annual banquet; his subject "The Influence of Southern Surgeons on My Professional Career."——Dr. John J. Abel, professor of pharmacology, Johns Hopkins University School of Medicine, was elected president of the American Association for the Advancement of Science during the annual meeting in New Orleans, Dec. 31, 1931. Dr. William H. Park, director of laboratories of the New York City Department of Health, was elected vice president for Section N, the Medical Sciences.——A sectional meeting of the American College of Surgeons for Pennsylvania, Ohio and West Virginia will be held in Pittsburgh, January 25-26. Among other speakers will be Drs. George W. Crile, Cleveland, on "A New Principle in the Prevention of Postoperative Pneumonia, Cardiac Decompensation and Suppression of Urine"; Burton J. Lee, New York, "Indications for Surgery or Irradiation in the Treatment of Cancer," and Alfred W. Adson, Rochester, Minn., "Value of Sympathetic Ganglionectomy and Trunk Resection in the Treatment of Vascular Diseases."——The Central Tri-State Medical Society (Ohio, West Virginia and Kentucky) held its quarterly meeting, January 21, in Huntington, W. Va. Speakers were Drs. George W. Crile, Cleveland, on "A New Principle in the Prevention of Postoperative Pneumonia, Cardiac Decompensation and Suppression of Urine"; Albert C. Furstenberg, Ann Arbor, Mich., "Acute Suppurations in the Throat, Neck and Mediastinum," and Harold T. Hyman, New York, "Pharmacology of Circulatory Drugs, Including Recent Observations on the Use of Drugs in Hypertension."——At the seventeenth annual meeting of the Medical and Surgical Association of the Southwest in Phoenix, Ariz., Dec. 3-5, 1931, Dr. William R. Jamieson, El Paso, Texas, was installed as president; Dr. Fred D. Vickers, Deming, N. M., was made president-elect; Drs. Walter A. Gekler, Albuquerque, N. M., and Orville H. Brown, Phoenix, vice presidents, and William Warner Watkins, Phoenix, secretary. The next annual meeting of the association will be in Albuquerque.

Medical Bills in Congress.—Change of Status: S. 1769, to authorize pay patients to be admitted to the contagious disease ward of the Gallinger Municipal Hospital, has passed the Senate. H. R. 7525, by Representative Bankhead, Alabama, providing that the United States shall cooperate with the states in promoting the general health of the rural population and the welfare and hygiene of mothers and children, introduced January 12, was on January 13 ordered favorably reported by the House Committee on Interstate and Foreign Commerce, meeting in executive session. **Bills Introduced:** S. 100, by Senator Capper, Kansas, to amend the laws of the District of Columbia relating to degree-conferring institutions by providing that any institution heretofore incorporated under such laws, operating exclusively in a foreign country, shall be permitted to use the words "American," "Federal," etc., in its title. S. 141, by Senator Hatfield, West Virginia, to erect a veterans' hospital in northern West Virginia. S. 796, by Senator McNary, Oregon, to erect a veterans' hospital at Klamath Falls, Ore. S. 1307, by Senator Capper, Kansas, to authorize an appropriation for the alteration and repair of buildings of the Eastern Dispensary and Casualty Hospital, District of Columbia. S. 1328, by Senator Johnson, California, to confer the benefits of hospitalization and the privileges of the Soldiers' Homes on certain persons who served in the Quartermaster Corps or under the jurisdiction of the Quartermaster General during the war with Spain, the Philippine insurrection, or the China relief expedition. S. 1583, by Senator Wheeler, and H. R. 6701, by Representative Rankin (by request), Mississippi, to make it mandatory that the Administrator of Veterans' Affairs furnish hospitalization to veterans suffering from disabilities not of service origin. S. 1690, by Senator Reed, Pennsylvania, to provide medical and hospital care for members of the National Guard, Organized Reserves, Reserve Officers' Training Corps and citizens' military training camps who become injured or contract disease while engaged in military training. S. 1697, by Senator Reed (by request), Pennsylvania, to establish a permanent medical service in the Veterans' Administration. S. 1720, by Senator Thomas, Oklahoma, and H. R. 5616, by Representative Johnson, Oklahoma, to authorize an appropriation for a nurses' home at the Fort Sill Indian Hospital, Lawton, Okla. S. 2479, by Senator Bingham, Connecticut, to establish a branch home of the National Home for Disabled Volunteer Soldiers in Hawaii. S. 2492, by Senator Vandenberg, Michigan, to erect a 362 bed addition to the veterans' hospital at Camp Custer, Michigan. S. 2517, by Senator Jones, Washington, to erect a 300 bed addition to the veterans' hospital at American Lake, Wash. S. 2594, by Senator Brous-

sard, Louisiana, to erect a 250 bed addition to the veterans' hospital at Alexandria, La. S. 2669, by Senator Shipstead, Minnesota, to extend the benefits of the Emergency Officers' Retirement Act to certain emergency officers of the war with Spain, the Philippine insurrection and the Boxer rebellion. S. 2818, by Senator Walsh and Senator Coolidge, Massachusetts, to erect a veterans' hospital at or near Boston. S. 2966, by Senator Hawes, Missouri, to erect a 300 bed addition to the veterans' hospital at Jefferson Barracks, Missouri. H. Res. 98, by Representative Black, New York, to investigate the administration of the narcotic laws. H. R. 5607, by Representative Boland, Pennsylvania, to erect a veterans' hospital in Lackawanna County, Pennsylvania. H. R. 6668, by Representative Knutson, Minnesota, to erect a 200 bed addition to the veterans' hospital at St. Cloud, Minn. H. R. 6690, by Representative LaGuardia, New York, to authorize the Public Health Service to provide medical treatment for certain coal miners in Pennsylvania, West Virginia, Kentucky, Ohio, Indiana, and in "such other places where similar conditions may exist." H. R. 7256, by Representative Rogers (by request), to erect a 100 bed addition to the veterans' hospital at Northampton, Mass. H. R. 7359, by Representative Maas, Minnesota, to erect a 350 bed addition to the veterans' hospital at Fort Snelling, Minnesota. H. R. 7361, by Representative Rogers, Massachusetts, to erect a veterans' hospital and diagnostic clinic at Boston. H. R. 7443, by Representative Bulwinkle, North Carolina, to authorize an appropriation of $12,500,000 to provide additional hospital, domiciliary and outpatient dispensary facilities for veterans. H. R. 7518, by Representative Lea, California, to empower the President to authorize the governor of the Panama Canal to issue licenses to practice the healing art under regulations to be prescribed by the governor. H. R. 7533, by Representative Goldsborough, Maryland, to erect an 850 bed addition to the veterans' hospital at Perry Point, Md. H. R. 7786, by Representative Barton, Missouri, to authorize an emergency appropriation for special study and demonstration work in rural hygiene.

CANADA

Personal.—Dr. Hugh Edwin Munroe, lieutenant governor of Saskatchewan, was made a life member of the Regina Medical Society at its annual meeting in November.——Dr. Walter M. English, superintendent of the Ontario Hospital, Brockville, has retired after nearly twenty-five years in provincial institutions. He will be succeeded by Dr. Donald R. Fletcher, inspector of mental hospitals. Dr. English was president of the American Psychiatric Association for 1930-1931.

Society News.—Dr. Benjamin P. Watson, New York, addressed the Toronto Academy of Medicine, December 1, on "Genital Prolapse." At the first academy meeting of the season, October 6, a gold badge of office was presented to the president as an official emblem to be worn whenever the president is in the chair. The badge bears a figure of Hygeia, carrying in one hand a bowl from which the sacred serpent is being fed and in the other a scroll. Around the figure is an inverted horseshoe bearing the words "Academy of Medicine, Toronto," and surrounding the medallion is a wreath of laurel leaves. Above the medallion proper is the crest of the academy. The badge was presented to the academy by Dr. John Ferguson.——Physicians and dentists practicing in the drought areas of Saskatchewan are to receive grants from a relief commission, it is reported. Districts of the province have been graded according to the severity of the drought, and the grants have been determined accordingly. Physicians in area A will receive grants not exceeding $75 a month, and those in B and C not exceeding $40 a month. Dentists in area A will receive $25 a month and those in the other areas $15.——Dr. Leighton C. Conn addressed the Edmonton Academy of Medicine, Nov. 4, 1931, on "Modern Concepts of Prenatal Care."——Dr. Frederick N. G. Starr, Toronto, was elected president of the Royal College of Physicians and Surgeons of Canada at its second annual meeting at Ottawa, Nov. 19, 1931. Dr. Thomas C. Routley, Toronto, continues as registrar-secretary.——Drs. Charles S. McKee and Murray McC. Baird addressed the Vancouver Medical Association, January 5, on "The Interpretation of Blood Pictures" and "The Clinical Aspect of Some Blood Diseases," respectively.

CORRECTION

Eye Burns Produced by Tear Gas.—In the summary of Dr. William D. McNally's article in THE JOURNAL, January 2, page 46, the first sentence should read: "All burns of the skin caused by choracetophenone should be promptly washed with a 4 per cent solution of sodium sulphite dissolved in a 50 per cent alcoholic solution; that is, one part alcohol and one part water."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 19, 1931.

The New Graduate Medical School

The foundation, under government support, of a graduate medical school in London, where the vast teaching resources of the metropolis would be centralized, has been announced in previous letters. The announcement that applications will be received for the post of dean is made the occasion of a review by the governing body of the progress made. In April, 1930, the government announced that it accepted the recommendations for the organization of a hospital and school devoted solely to postgraduate education, made by a representative committee of the medical profession. The organization consists of a municipal hospital of 400 beds, the Hammersmith Hospital, and a new medical school to be built in conjunction with it at a cost of $1,250,000. As no endowment of the school was in sight, a further sum would be required for maintenance. The government was so impressed with the importance of a proper system of graduate education in London, not only from the domestic but also from the imperial and international points of view, that it consented to contribute a maximum sum of $1,250,000 for building and equipping the medical school, and also to make grants to the University of London toward the maintenance of the school. A third element in the scheme was a residential hostel for students, for which reliance was placed on private benevolence. An appeal was made for the establishment of "London House" as a hostel for the use of students from the dominions not only in medicine but in other arts and sciences. This was so successful that four houses in Bloomsbury standing on part of a site purchased by the Dominion Students' Hall Trust were converted and furnished to accommodate thirty men students. The governing body of the school consists of representatives of authorities: Sir George Newman (ministry of health), Dr. B. Lambert and Mr. Silkin (London county council), Mr. H. L. Eason and Prof. G. E. Gask (London University), Mr. F. C. Goodenough (dominions office), Lieut.-Col. H. R. Dutton (India office), Dr. A. T. Stanton (colonial office), Lord Dawson of Penn (Royal College of Physicians), Lord Moynihan (Royal College of Surgeons), Dr. C. Wall (Society of Apothecaries), Dr. Watts Eden (Royal Society of Medicine) and Sir Robert Bolam (British Medical Association). In view of the general financial stress it was inevitable that the amount of money to be devoted to the scheme, and even the question whether the country could afford the scheme at all, should be reviewed. The government is so anxious to avoid the indefinite postponement of the scheme that it has felt justified in deciding to contribute for the building and equipment of the school, but it has reduced the sum which parliament will be asked to vote from $1,250,000 to $500,000. It is not yet possible to say when the British Postgraduate Hospital and Medical School will be opened to students, but the decisions of the government and of the London county council to treat the establishment of a graduate institution as an indispensable health service and of the governing body to appoint a dean forthwith, are indications that the scheme, which has been advocated for many years, is about to be realized.

The Reform of Hospital Outpatient Departments

The general council of King Edward's Hospital Fund (an organization which collects a large sum annually for the voluntary hospitals) has appointed a committee to inquire into the methods of the outpatient and casualty departments of the London hospitals. The matter has come into prominence in connection with three problems: 1. The length of time during

which outpatients have to wait, and the suggestion that this might be reduced by administrative methods. 2. The overcrowding of the outpatient departments, which is often said to be caused by the attendance of large numbers of patients for whose treatment the services of a hospital are not necessary. 3. The question whether, in order to remedy these and other defects, the outpatient departments should, apart from emergencies, be used only for consultation; i. e., for patients sent by physicians for second opinions or for specialist treatment (a system advocated by the British Medical Association). The hospitals have long been seeking for remedies which, while not excluding suitable cases, would reduce hours of waiting. An inquiry was held by the fund in 1911 into the functions of outpatient departments and their relation to other medical and social agencies. The recommendations were that the hospitals should themselves sift out and refer to other agencies (private physicians, provident dispensaries and the poor-law medical service) patients who on medical or financial grounds are more suitable for treatment by them; that these agencies should be encouraged to refer to the hospitals cases needing consultative or specialist attention, and that, to facilitate this coordination, there should be an extension of the system of specially trained inquiry officers (almoners). Since that time important changes have taken place—the provision of general practitioner treatment under the national health insurance acts, the further organizing of other public medical services (including those supplied by the poor law), the increased expense of hospital specialist services, and the system by which patients who can afford to do so pay part of their cost to the hospitals.

Conservation of Lymphoid Tissue of Upper Respiratory Tract

Mr. T. B. Layton, surgeon to the throat and ear department of Guy's Hospital, has published in a booklet what he has been teaching for many years—that the current disregard of the value of the lymphoid tissue of the upper respiratory tract, manifested in wholesale operations on tonsils and adenoids, is wrong. He points out that immunity to disease is largely acquired after birth and that the lymphoid tissue of the body plays a great part in the process. Whether antibodies are formed by the subepithelial glands, as Digby believes, or whether they function as sieves to hold up organisms is immaterial. Under present conditions of life no child escapes infection, but this is often of the subclinical type, in which the organism gains access to the nose and throat but the reaction of the tissues is not great enough to produce symptoms. When the reaction is greater the child is said to have a cold, and a certain number of colds are of value in that they produce immunity. With each cold the nasopharyngeal lymphoid tissue swells and then subsides. But, if the infections are unduly numerous or prolonged, resolution may not be complete and there may be sufficient permanent enlargement of this normal structure to obstruct the posterior nares or eustachian tube, producing what is called adenoids. Thus adenoids are the result and not the cause of infections. The opposite holds for the faucial tonsils, which, in consequence of embedded organisms developing in them, become a source of sepsis. The tonsil problem is one of sepsis, the adenoid problem one of mechanical obstruction. Adenoids form only part of a general enlargement of the lymphatic tissue of the upper respiratory tract. Such enlargement means that there is great need for this lymphoid tissue. It usually occurs in those living under bad conditions of hygiene, particularly overcrowding. Mr. Layton therefore advises that no operation on the lymphoid tissue of the upper respiratory tract should be done on children from overcrowded houses, especially if they come from the ground floor or basement. Adenoids are the result of the great excess of organisms with which the upper respiratory tract has to deal and are not the cause of the ill development and anemia from which the child suffers. These are due to the bad hygiene, and the adenoids are an attempt on the part of nature to prevent the ill results. Much of the benefit attributed to the operation for adenoids should be put to the credit of the careful diet and attention given to a child before and after any operation. The so-called adenoid facies has no connection with adenoids or obstruction of the airway. It is regarded by Keith as evolutionary, as shown in a previous letter. The commonest cause of nasal obstruction in a child is general swelling of the mucous membrane due to some chronic infection. It is associated with mucous secretion, which stagnates because the child cannot blow the nose, and this in turn is a cause of obstruction and enlargement of lymphoid tissue.

Operation should be performed for adenoids only when other treatment fails. The faucial tonsils should never be removed because they are enlarged but only because they are a source of sepsis. The occurrence of follicular tonsillitis three times in a year is an indication for removal, but in the absence of this history it is never certain that the tonsils are a source of sepsis. But irregularity of surface and in the size, shape and openings of the crypts and in the color of the surrounding mucous membrane is an indication of chronic inflammation. Bacteriologic evidence is occasionally of use. To grow a hemolytic streptococcus once from a tonsil means nothing, but to obtain it from the depths of the crypts on several occasions indicates sepsis.

PARIS

(From Our Regular Correspondent)

Dec. 9, 1931.

Remote Results of Treatment of Gastroduodenal Ulcers

The Société de chirurgie instituted an inquiry among its members as to the remote results of medicosurgical treatment of gastroduodenal ulcers. Mr. Charrier, in the department of Professor Gosset, operated on 134 patients, 104 of whom he was able to reexamine later. The operative mortality was 2 per cent. He classes separately ulcers of the lesser gastric curvature and duodenal ulcers. The former, more frequent in women, were treated by simple gastro-enterostomy, gastrectomy *en selle* or gastropylorectomy. Of thirteen posterior gastro-enterostomy operations (other patients could not be located), six were successful and seven were failures. The six saddle resections brought four recoveries and two ameliorations. The true gastrectomy gave better results than the gastro-enterostomies by removing two thirds of the lesser curvature. In the fourteen gastro-enterostomies for pyloric ulcers there were thirteen recoveries, and in the thirty-five cases of duodenal ulcer there were twenty-nine recoveries and six ameliorations. For ulcers that have brought about gastric biloculation, the author performed chiefly gastro-enterostomies. Mr. Desmaret makes the same classification, from the operative point of view. For ulcer of the lesser curvature he recommends gastropyloric resections. Simple excision is not good even when supplemented by a gastro-enterostomy. The results in the latter operation are problematic. The author divides pyloric ulcers into two classes: those in which there is a manifest hypersecretion with hyperchlorhydria, for which resection is preferable to simple gastro-enterostomy, and those in which hypersecretion and hyperchlorhydria are not marked, in which gastro-enterostomy usually suffices. In this last intervention, Desmaret emphasizes the advantage that lies in making a marginal mouth, especially in the descending portion. He is not particularly partial to large mouths—especially those performed after the Polya method. He emphasized the importance of the postoperative regimen and the difficulties of the surveillance. Robineau and Max Lévy reported the interesting results of their statistics. While Lévy had never seen ulcers clear up under purely medical treatment, forty-four patients operated on and relocated had

nearly all recovered. While the proportions were a little different from those of the previous authors, the conclusions were identical—in favor of gastrectomy for ulcer of the lesser curvature and of gastro-enterostomy for pyloric ulcer. On the mouths of the gastro-enterostomies, which were kept rather small, the authors observed no stenosis, intermittent or otherwise, nor peptic ulcer. In none of the patients reexamined fluoroscopically did they observe stasis.

Bergeret and Caroli gave some statistical data on a restricted group of patients all belonging to the same social class (employees of a railway company) whom they reexamined carefully after the intervention. While the operations for ulcers performed by Mr. Bergeret comprised more than 300 cases, the statistics given in their communication concerned only fifty-seven patients operated on, fifty of whom were reexamined. From the social point of view, surgical intervention is more economical than medical treatment. They emphasized the fact that many patients after the operation did not regain their former stoutness. As they had stated in a recent article, they advised large-mouthed gastro-enterostomy on the vertical slope of the small curvature. They performed always the Polya operation. From the radiologic point of view the patients in whom the stomach emptied most rapidly (although there was no incontinence) were the ones who showed the best operative results.

Conflict Between Government Social Insurance Department and the Syndicate of Physicians

The new social insurance law, as was foreseen, is beginning to give rise to complications on every hand. The situation has become acute in Alsace, where the insurance system was introduced by the Germans before the return of this province to France. The faults of the system have thus had more time to become evident; that is, the tyrannical attitude of the government insurance department toward the physicians and the damage that results from the system as regards public finances and the welfare of the insured themselves. In 1929, the Strasbourg department of social insurance rejected the proposals of the medical syndicate of the city with reference to service to be rendered to persons subject to the social insurance act. It gave as the official reason that the conditions imposed by the syndicate would increase its expenses by 750,000 francs annually, or about 10 francs per person insured. It preferred to provide medical service for the insured by engaging a certain number of physicians (about fifty-six) under private contracts. The result has been that the insurance department has expended 1,975,000 francs more than it would have expended if it had accepted the proposals of the syndicate. In 1930 it had to provide in its budget for an expenditure of nearly 3,000,000 francs, or 2,000,000 francs more than in 1929. Furthermore, the number of unemployed is higher under the present system than under that of the Syndicat de médecins. It is said that the proportion has increased from 8 per cent to 15 per cent; but these figures are not certain, for the department, naturally enough, does not give out exact information. Some large factories (for example, the Mathis automobile factory, with 4,000 insured employees) have abandoned the government insurance system because it has not given them satisfaction. They have preferred to create new private organizations or to insure their employees in the societies that have remained loyal to the Syndicat de médecins, and, if the local law did not deny to workmen the right of choosing their sick benefit societies, the government insurance department would already have lost more than half of its members. This shows the confidence that the socially insured have in the management of the government insurance department. The situation in the department of Bas-Rhin is, moreover, quite peculiar. During the forty-eight years of German occupation, the three departments of Alsace and Lorraine were under the German law. When they were returned to France after the war the French government agreed not to change their social and religious organization unless they demanded a change. Under the German régime, members of the sick benefit societies received free medical treatment. The medical profession was divided into two groups, one practicing medicine and the other composed of physicians engaged and paid by the sick benefit societies. The recent French social insurance law, which has given rise to so many protests from every quarter, except from the countless government employees that it has necessitated, imposes on the insured part of the cost of a physician and of prescriptions. Recently, Germany, recognizing the many abuses to which its law opened the way, and in view of the enormous expenditures to which the system has given rise (which is no doubt one of the causes of the present economic distress), has modified its law and now requires the insured to pay part of the cost of medical treatment. The three French departments that make up Alsace and Lorraine are therefore the only ones where medical treatment is provided the insured without cost, other than the regular annual contributions, and it is here that the physicians are treated with the most arrogance by the social insurance department. The Syndicat de médecins of Bas-Rhin has therefore passed a resolution in favor of the adoption in Alsace of the provisions of the French social insurance law, which, in spite of its weakness, is preferable to the German law, in that it harms the physicians less and does not open the way, to the same extent, to fraud on the part of the insured and to arrogance on the part of the social insurance department.

VIENNA

(From Our Regular Correspondent)

Dec. 2, 1931.

The Austrian Sick Benefit Associations

The ministry of public health published recently the results of the inquiry into the conditions of the sick benefit associations during the year 1929-1930. During this fiscal year there were in the republic of Austria eighty-two sick benefit associations, which were functioning on the basis of the law adopted in 1928-1929 "on the insurance of workmen against disease and accident." All these associations, with the exception of nine societies made up of employees of the federal railways, are supervised by the ministry of health, and the figures of the following statistics have reference exclusively to them. The number of members enrolled in the associations examined was 1,056,503, of whom 410,480 were women. Of the total membership, 480,320 persons resided in Vienna, 167,000 in Lower Austria, 118,133 in Upper Austria, 121,692 in Styria (the industrial region of our little republic), 47,380 in Tyrol, and the remainder in the smaller provinces. The total number of cases of morbidity was 910,708 (which included 12,261 confinements), with 17,776,371 days of sickness. This constitutes an average of 16¼ days' sickness for each member. The receipts amounted almost to 130,000,000 Austrian shillings ($18,500,000). Expenditures amounted to 127,500,000 shillings, or $18,000,000. This small balance was due to the constantly declining number of members, the result of the increasing unemployment. As compared with the three previous years with 15.9 and 7 million shillings, respectively, left in the treasury, this is a serious symptom of the bad economic conditions.

The nature of the relief given by the associations to their members is instructive. For sick benefits to patients (a per diem allowance for the whole period of illness) and to parturients 54,800,000 shillings was paid out during the fiscal year (nearly $8,000,000); for medical fees, 21,000,000 shillings ($3,000,000); for medicaments, 12,500,000 shillings; for hospital charges, 17,500,000 shillings ($2,500,000); for funeral expenses, 1,500,000 shillings. Every member of the societies received on an average 101 shillings for benefits of various kinds. The

total expenses of administration amounted to 15,000,000 shillings, or 11.5 per cent of the total expenditures (about 15 shillings, or $2, annually per member. These data concern only the societies composed of workmen and employees. In addition, there are the associations of the federal railways with about 65,000 members, of the communal employees with about 35,000 members, and of the government employees with 212,000 members. These three classes of associations include also the families of the members, so that a further million persons are insured in sick benefit associations against disease and accidents.

The Seventieth Birthday of Prof. Markus Hajek

Prof. Dr. Markus Hajek, an eminent authority in laryngology and rhinology at the University of Vienna, on the recent celebration of his seventieth birthday was the recipient of unusual ovations and honors. He was honored not only by many medical societies, who appointed him an honorary member, but also by the city of Vienna, which appointed him civis honoris causa. His pupils, who number many hundreds and who hold important positions at universities and hospitals in all parts of the world, paid him homage. Hajek had to fight a battle royal for his position for many decades. As an outsider (he had never been a clinical assistant) and, furthermore, as a Jew who was truly a self-made man, he was for a long time a thorn in the flesh for both the conservative and the reactionary schools. In fact, he had long since become an internationally known figure when he finally was offered a post in the clinic. Not until after the revolution of 1918 was it possible to put "the right man in the right place." As the head of the Klinik für Hals and Nasenkrankheiten, he established a well known "school," which perhaps draws more foreign physicians to Vienna than any other and thus helps to revive the fame of our university.

New Heads of the Gynecologic Clinics

The chairs in the gynecologic and the obstetric clinics, which became vacant as a result of the deaths of Professors Peham and Kermauner, remained unoccupied for more than a year, but now, finally, definite action has been taken. It occasioned surprise when it became known that Professor Halban, a leading authority in gynecology in Austria, had received the appointment in spite of strong opposition. The university is fortunate in securing such an able teacher and investigator. His researches on the anatomy of the female pelvis, on the relations of the hormones and on operative technic are widely known. In spite of his appointment, certain forces are at work to prevent his assuming the chair. The second clinic will be conducted by Professor Weibel (a pupil of Wertheim), who is now in Prague, where, as head of the clinic, he has proved himself to be an excellent operator and is also highly esteemed by the students as a teacher. As a result of these two appointments, the wheels of learning at the university will again begin to grind more smoothly.

Chemical Exclusion of Sympathetic Nerve by the Doppler Method

Seven years ago, Dr. Doppler announced a method by which he destroyed the vasoconstrictors of certain arteries. His method was simple and gave good results. He painted the artery with a 7 per cent solution of phenol, whereby the highly vulnerable fibers of the sympathetic nerve were so damaged that a marked vasodilatation resulted. The first case concerned a patient with ulcus ventriculi, who after the operation did not suffer recurrences. Later, the method was employed whenever cramplike conditions in the region of the arterial system were to be combated. In a recent communication to the Gesellschaft der Aerzte in Vienna, Doppler reported what success he and many other physicians had had with the method during the past seven years. It is much simpler than the Leriche operation and the results are better. In arteriosclerotic spasms in the region of the femoral and tibial arteries (intermittent claudication, gangrene of the toes, dysbasia spastica) rapid improvement was observed. Painting of the arteries was applied likewise to the thyroid, to the arms and to the stomach. The resulting increased flow of blood through the vascular regions concerned had not merely a local effect but resulted usually in a rather prompt general improvement. Frequently the Doppler method has been employed to bring about a "rejuvenation" after the manner of Voronoff or Steinach. The painting of the testis actually brought about a rejuvenation—not a sexual rejuvenation, to be sure, but a better supplying of the body with the masculine hormone, whereby the general health condition is favorably influenced: improvement or return of the appetite, lessening of the tendency to catarrh as a result of a better blood supply brought to the mucous membranes; likewise improvement of alveolar pyorrhea and a tightening of loose teeth. The experimental proofs for the distant action of this painting of the testis were supplied by Biedl in Prague in collaboration with Redisch. They found that in elderly persons the capillaries of the buccal mucosa are dilated after Doppler's intervention, so that its action was definitely measurable. The better blood supply produces an increase of function in the various organs. Hence, the method has been employed also in diabetes in order to stimulate the pancreas to produce more insulin. The few trials of painting of the pancreatic artery have given excellent results and Doppler urged the medical profession to employ this method in suitable cases.

TURKEY

(From Our Regular Correspondent)

Ankara, Dec. 15, 1931.

Regulations Concerning Marriage Health Certificates

Syphilis as a social menace in Anatolia may be traced to the beginning of the nineteenth century, when the establishment of compulsory military service brought the youths from the villages into the cities. With the movements of troops during the latter half of the last century, a definite increase in syphilitic infections was noticed. On the other hand, civilians engaged in commerce who went to Russia and the Caucasus and those who had gone there for employment as workmen or bakers brought back the disease to their native provinces, in particular those along the Black Sea. In these provinces, Prof. Duhring Pasha from Germany about thirty years ago made investigations for the government, for as the result of syphilis the decrease of births had become alarming and whole villages had become extinct. As a sequel to the World War with its increase in low morals and poverty, syphilis increased in most large cities.

May 6, 1930, the general public health law was published, according to which a health certificate is required of all men and women in order to procure a marriage license. The regulations published Aug. 17, 1931, read as follows:

Physical examinations for marriage health certificates are made gratuitiously at all health departments or other government health agencies. Only the health officer is authorized to make such examinations, which are to take place only on the premises of a health department or other government health institution. A marriage health certificate issued by a private physician or a physician connected with an official agency but who is not a health officer is not valid unless signed by the local health officer. Before signing a health certificate, the health officer is to consult the records in order to ascertain whether the applicant has at one time been suffering from one of the diseases making marriage prohibitive according to articles 123 and 124 of the general public health law. Health certificates not bearing the official seal or signature of the health officer are not valid.

In addition to investigating the general health condition of the applicant, symptoms of venereal diseases, leprosy, mental disease or trachoma are to be looked for. If men are concerned, special attention is to be given to the mucous membrane of the cheek and lips, the tongue and beneath the tongue, the gums, the palate and the throat, the skin of the thorax, abdomen and back, the axillary glands and the glands of the groins and the elbow, the knee reflexes, and in particular the generative organs with regard to the presence of secretion. If women are concerned, examination of the mouth is to be made in the same way, and if the applicant has not previously been married only the elbow glands are to be examined besides. If during the examination symptoms are noticed of a disease which according to the law does not permit marriage, or if doubt arises as the result of such examination, a more thorough method is to be employed.

In case tuberculosis is suspected, the percussion and auscultation method is to be used and sputum is to be obtained from the applicant in the presence of the physician. In case syphilis is suspected, blood for a test, and in case gonorrhea is suspected, secretion is to be obtained and forwarded to a government laboratory.

In case leprosy or a mental disorder is suspected, the applicant is to be seen by a specialist. If it has not been possible to make laboratory examinations for the reason that a laboratory was not available, the physician is required to mention this fact in his report. Specimens are to be forwarded for examination in a sealed package accompanied by a note in a closed envelop and forwarded by a person other than the applicant. The results of the laboratory examination are to be made known to the health officer also by a written note contained in a closed envelop conspiciously bearing the word "personal." If as the result of the examination a disease is diagnosed which according to the law makes marriage prohibitive, the applicant is refused the health certificate and the physician is to forward the records to the health officer, who is to take further charge of the applicant.

Such persons may not get married unless the danger of contagion has been eliminated or the disease definitely cured as the result of scientific treatment, which fact is to be proved by a health certificate.

In case Koch bacilli have been found or the clinical picture is one of active tuberculosis or tuberculosis of the larynx, the applicant is refused the certificate and advised to postpone intentions for six months; if at the end of that time the applicant's condition has not improved, a further postponement for six months is to be decided on and the health officer required to advise both parties as to the nature of the disease and the consequences involved in contracting marriage under existing conditions.

Examinations for marriage health certificates are to be given the same prompt attention as given emergency cases. A specialist to whom an applicant is sent for final diagnosis and also the physician to whom specimens are forwarded are required to give precedence in the order of examination and carry out such examinations promptly.

Physical examinations made at government health departments are to be made without the presence of a third person, and the physician is not to divulge the results. Women are permitted to have a relative or a friend present at such examination.

Private physicians examining applicants for marriage health certificates are required to conform to these regulations. A private physician must not issue a marriage health certificate if the applicant has not presented sufficient evidence as to identification or without having examined the applicant. Any physician not acting in conformity with these regulations is liable to punishment according to decisions of article 282 of the general public health law, but if according to the Turkish penal code offense deserves more severe punishment the decisions of the penal code are applied. These regulations have been approved by the council of state, ratified by the council of ministers, and are valid from the date of publication, Aug. 17, 1931.

BELGIUM

(From Our Regular Correspondent)

Nov. 28, 1931.

First Aid in Occupational Accidents

Addressing recently the Société belge de médecine et de chirurgie du travail, Mr. Stassen considered the organization of first aid in occupational accidents, distinguishing between individual accidents and collective accidents. In the first group are (1) persons slightly injured and (2) persons severely injured. Persons slightly injured are divided into: (*a*) those who do not bleed, having only a slight contusion, and who, after application of an alcohol dressing by a foreman specially trained as first-aid assistant, are able to resume work, and (*b*) persons slightly injured who bleed. After the first-aid assistant has applied a temporary dressing to the injured member, class *b* patients are directed to go to the infirmary of the factory where they can receive the care of the appointed nurse, who, functioning under medical supervision, decides whether the patient's condition requires the immediate attention of the physician. If he does not, she applies a dressing, which is examined by the physician when he makes his round (usually the following day). If the nurse decides that the patient requires the immediate attention of the physician, the latter is summoned. If, on the other hand, the patient is severely injured, notice is immediately sent not only to the first-aid assistant but also to the physician, the auto-ambulance and the surgical clinic. The fundamental principle is that, after having revived the injured patient, the first-aid assistant must use all means to assure the immediate evacuation of the patient, in the best possible condition, to a clinic where he will obtain complete surgical care. In the meantime, the summoned physician and nurse should proceed as quickly as possible to the scene of the accident; but the injured man who is urgently in need of medical aid should not await their arrival, as minutes may be precious. It is the duty of the medical personnel to chase after the patient; but it is not the duty of the injured man to await the arrival of the physician. Mr. Stassen, in passing, brought serious charges against the tourniquet, emphasizing that it is a prolific source of gas gangrene and of toxic shock.

In the management of collective accidents, the principles are much the same. When the rescue work has been accomplished by the trained rescuers, the injured persons should be evacuated promptly to a clinic possessing an adequate personnel and sufficient equipment. Persons who have been overcome by gas, who have suffered an electric shock, or who are unconscious after submersion, constitute the only exception to this rule. Contrary to what has been demanded in regard to other injured persons, persons belonging to any of the three categories just mentioned must be given immediate aid and the first complete medical care, on the ground. Artificial respiration must be applied at the site of the accident and as promptly as possible. The patient should not lie in the dorsal position but should lie on the stomach (the Schäfer method). In case of accident, the patient, unless perchance his stomach is empty, should be placed in the most favorable position for the evacuation of mucus and for possible vomiting. Thus the entrance of food into the respiratory tracts will be prevented.

This plan of organization, which, in the opinion of Mr. Stassen, may be regarded as a model, has thus far been carried out only by large manufacturing concerns. It may

not be feasible everywhere, notably in the agricultural sections, but, Mr. Stassen replies, that objection will soon cease to have weight. Mechanical locomotion and the extended use of electricity, permitting in the most remote parts of the country the installation of machines and the use on a large scale of electric power, are rapidly creating a situation that will require everywhere a more systematic organization of first aid for the injured. In the churches, the town halls, the schools, and the drug stores special dispensaries should be provided, to which permanent nurses may be attached and where physicians will be certain to find at all times the instruments, the material and the aid necessary to give to patients the care that their lesions demand. Thus the medical profession will be able to adapt itself to the conditions of modern life. In closing, Mr. Stassen expressed his faith in medicine; for, under the new conditions of life creating new dangers, physicians will comprehend the new duties to society that devolve on them, and he has no doubt that they will rise to the important task that they can fulfil in the treatment of the victims of this machine age.

Causes of Death in Katanga

The following diseases are the chief causes of death in Katanga (Belgian Congo): pneumonia, dysentery, verminoses, typhoid, cerebrospinal meningitis, tuberculosis, smallpox and varioloid. Pneumonia is the most frequent fatal disease for native workmen. In 1929, 42 per cent of the deaths among them were caused by this disease. The case mortality rate is 18 per cent. After the first year of employment its frequency diminishes greatly.

Amebic dysentery is rare in Katanga. Bacillary dysentery is more common.

Of the verminoses, one observes most commonly ancylostomosis, anguillulosis and bilharziosis. Bilharziosis of the Mansonia type is encountered frequently among the natives of Lomami.

Typhoid, type C, brought in from Ruanda-Urundi and not influenced by the vaccine of types A or B, was the cause of grave epidemics in 1927 and 1928. Since the use of the polyvalent antityphoid vaccine, types A, B and C, the incidence of typhoid has declined greatly. In 1929 typhoid was the cause of 6 per cent of the mortality.

Cerebrospinal meningitis has become endemic in Katanga. Among the workmen of the Union minière, since the systematic use of antimeningococcus serum, prepared on the ground with local strains, the morbidity, which was 12 per cent in 1928, dropped in 1929 to 1.10 per thousand. In the government of Katanga the results were not so favorable.

In 1929, thirty-six cases of tuberculosis were diagnosed in Katanga, either with the microscope or at necropsy. Hence, tuberculous infection in Katanga is not widespread, but it is regarded as a serious menace. Immunization with the B C G vaccine has been employed since 1929. It is applied chiefly to children of school age who do not react to tuberculin.

Epidemic outbreaks of smallpox and of varioloid occur from time to time. They account for 0.7 per cent of the deaths. They are being rapidly eradicated by vaccination. In Katanga, vaccine prepared in Elisabethville is employed. The duration of immunization conferred by the vaccine to the natives is shorter than that conferred to the white population. It does not appear to be more than two years.

Leprosy in the Belgian Congo

Addressing recently the Société belge de médecine tropicale, Dr. J. Schwetz stated that leprosy exists throughout the Belgian Congo but that the distribution varies greatly. For instance, it is rare in the northwestern part of Katanga and in the Kwango region but relatively frequent in the eastern province, and particularly in the Nepoko region, where leprous persons are counted by the thousands. In Stanleyville and the country roundabout, leprosy is not rare. Schwetz had an opportunity to study fifteen patients affected with macular, tuberculous or neurotic leprosy, and treated in an annex of the hospital for the natives, by esters of chaulmoogra oil. He remarked that, with the exception of tuberculous leprosy, in which the lepromas are filled with Bacillus leprae, the bacterioscopic diagnosis is reached more often by the discovery of bacilli in the glandular fluids than by examination of the nasal mucus. It does not appear that the ethyl esters of chaulmoogra oil have accomplished significant results. There have been remissions, but they were followed by exacerbations. Schwetz does not consider chaulmoogra oil an efficacious remedy in leprosy.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 31, 1931.

Congress of Medicine

The fourth National Congress of Medicine was held, October 3-11, at Buenos Aires, under the chairmanship of Prof. Dr. J. Arce aided by Drs. Arrillaga, Fonso Gandolfo, Ivanisevich and Bosco, as secretaries. The one topic on the program was "Treatment of Acute Pyogenic Infections." Dr. I. Imaz presented a paper covering the problem as a whole. Dr. P. Mirizzi discussed surgery in acute pyogenic infections and Dr. C. Muniagurria spoke on the treatment of the same condition in childhood. The congress was attended by delegates from several countries, as follows: Drs. E. Wollman, Santiago, Chile; Gallart Monés, Barcelona, Spain; Keyser, Berlin, Germany; A. Navarro, Montevideo, Uruguay, and Tissi Netto, São Paulo, Brazil. The attendants visited hospitals, in which clinics were given. The attendance of physicians and the number of papers presented were not as great as in previous congresses. Dr. Molineli presented before the section of infectious diseases a report, which Dr. Sordeli wrote with Molineli's collaboration, on observations made during their research on undulant fever. The congress adopted several resolutions, the most important of which were to organize a memorial to the late Prof. E. Canton and to present to Prof. Sordeli (who came down with undulant fever while performing laboratory studies related to the control of the disease, and still is ill), the best wishes of the attendants for his complete recovery.

Affairs of the Academy of Medicine

The faculty of the Academy of Medicine of Buenos Aires recently made a regulation by which the use of borates as antiseptic agents to preserve foods, especially lard, is restrained.

There are two vacancies on the faculty of the Academy of Medicine, one caused by the death of Dr. E. Canton and the other by the promotion of Dr. A. Gandolfo to emeritus professor.

The most important lectures delivered recently in the Academy of Medicine were those of Dr. Donatti on stones of the gallbladder, Dr. Eckstein on encephalitis, Dr. Austregesilo on the cerebellum in relation to the tonus of the muscles, Dr. Nobecourt on dystrophy of endocrine origin in children, Dr. Navarro on anatomy of the ligaments of the knee and therapeutic and pathologic indications, Drs. Barcia and García Otero on cancer of the lung, and Dr. Castex on mesosystolic murmurs in myocardial infarction.

Infant Mortality

Dr. G. Araoz Alfaro, ex-president of the national department of public health, discussed during the medical week, recently at Buenos Aires, the problems involved in infant mortality. The lowest indexes of infant mortality for the several countries of South America are those given by Argentina and Uruguay. During a period of five years, from 1923 to 1927, the infant mortality rate for Argentina was 110 per thousand. The dimi-

nution of the infant mortality in the federal capital is remarkable: from 190 per thousand in 1886 to 74 per thousand in 1928. The diminution is less striking in some of the provinces: in Córdoba from 212 per thousand in 1912 to 132 per thousand during the five year period, 1923-1927, and in Tucumán from 235 in 1912 to 178 per thousand. In Salta the rate was 198 per thousand during the same period. Death was caused by nutritional disturbances in 30 per cent of the infants, by congenital diseases or by diseases proper of new-born infants in 18 per cent, by diseases of the respiratory tract in 15 per cent, by tuberculosis or by infectious diseases in 10 per cent, and by unknown causes in 20 per cent.

Excess of Scientific Societies and of Medical Journals

The increasing number of independent scientific societies and medical journals in Argentina causes some harm to the work done by well established medical societies and medical journals. Besides the societies formed by members of the various specialties, which form a federation with the Asociación Médica Argentina, there are many other independent scientific societies in the suburbs of the city. Hospital bodies have also been organized in similar form and even the several wards of some hospitals are constituting smaller independent scientific societies by themselves. The number of papers from the members of so many societies is large although not instructive: as a rule, most of them are case reports which the authors try to publish in some medical journal. At the meetings of the societies the number of attendants is small and those who attend are not well prepared for the discussions presented, as a rule, by the head of the department to which the society belongs. Many of these societies publish their own journals, and there are also some others, financed by the unscrupulous acceptance of advertisements of medical preparations. The editors of some of those journals either request or accept any kind of collaboration, since they are more concerned with the amount to be published than with the quality of the articles.

Scholarships and Prizes

The scholarship given by the Devoto Foundation through the Academy of Medicine of Buenos Aires was awarded this year to Dr. Oscar Orías, who will take up work in physiology.

The Wilde prize, given by the academy for the best thesis on legal medicine written during the year, was given to Dr. C. Guerra for his study on carbon monoxide poisoning.

The Güemes prize, given for the best paper on clinical medicine, was awarded to Dr. I. Berconsky for his work on the output of the heart in normal and in pathologic conditions.

Marriages

FREDERICK CERES, Medical Inspector, Commander, M. C., U. S. Navy, to Miss Marie Cecelia Miller of Washington, D. C., Dec. 18, 1931.

ALBERTUS ULA STROUPE, JR., Mount Holly, N. C., to Miss Dorothy Lincoln of Morehead City, Dec. 31, 1931.

WESLEY O. BRANDON, Yadkinville, N. C., to Miss Kathleen Cooley Craver at Hillsville, Va., Dec. 13, 1931.

ROBERT BOYD RODMAN to Miss Elizabeth Martin Willard, both of Wilmington, N. C., Dec. 31, 1931.

MARTIN A. HATCHER, Hamlet, N. C., to Miss Nora Langston of Laurens, S. C., Dec. 26, 1931.

KERMIT ENGLISH BROWN, Asheville, N. C., to Miss Rosalind Read, of Oteen, Dec. 29, 1931.

HOWARD A. DUNAWAY to Miss Wanda Janice Saville, both of St. Louis, Dec. 24, 1931.

HARRY C. HILL to Mrs. Angela Lewis, both of Streator, Ill., Dec. 30, 1931.

Deaths

Edward Tyson Reichert, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1879; emeritus professor of physiology at his alma mater, demonstrator of experimental therapy, 1879-1884, physiology, 1884-1886, and professor, 1886-1920; formerly research associate to the Carnegie Institution, Washington, D. C.; aged 76; died, Dec. 25, 1931, in St. Petersburg, Fla., of chronic myocarditis and pulmonary edema.

John Benson Brimhall, St. Paul; University of Pennsylvania School of Medicine, Philadelphia, 1890; member of the Minnesota State Medical Association; formerly clinical instructor in orthopedic surgery, University of Minnesota College of Medicine and Surgery; executive secretary of the Minnesota State Board of Medical Examiners, 1897-1901; aged 69; died, Dec. 21, 1931, of coronary occlusion and carcinoma of the stomach.

James Edward Deets, Clarksburg, Md.; University of Maryland School of Medicine, Baltimore, 1882; member and past president of the Medical and Chirurgical Faculty of Maryland; past president of the Montgomery County Medical Society; formerly member of the state legislature; for many years member and at one time president of the county board of education; aged 75; died, Dec. 22, 1931.

Frederick E. Lawrence, New York; Medical Department of the University of the City of New York, 1895; for many years assistant surgeon of the U. S. Public Health Service in charge of the examination of immigrants at City Island who came down from Canada; aged 67; died, Dec. 31, 1931, in the Union Hospital, of carcinoma.

James Arnold Wynn ✠ Indianapolis; Indiana University School of Medicine, Indianapolis, 1919; associate in medicine at his alma mater; served during the World War; formerly on the staffs of the Indianapolis City Hospital and the Methodist Episcopal Hospital; aged 35; died, Dec. 4, 1931, in Colorado Springs, of tuberculosis.

Ellis Monroe Santee, Muhlenberg, Pa.; Homeopathic Medical College of Missouri, St. Louis, 1890; dairy expert, U. S. Department of Agriculture, 1906-1907; lecturer on sanitary subjects, New York State Department of Agriculture, 1908-1917; formerly health officer of Cortland, N. Y.; aged 69; died, Dec. 21, 1931.

Elliott Fraser Holcombe, Farmington, Mich.; Michigan College of Medicine and Surgery, Detroit, 1889; member of the Michigan State Medical Society; past president of the Oakland County Medical Society; aged 64; died, Dec. 19, 1931, in the Harper Hospital, Detroit, of adenoma of the prostate.

Hadwen P. Wilcox, Central Square, N. Y.; Medical Department of the University of the City of New York, 1888; member of the Medical Society of the State of New York; aged 65; died, Dec. 15, 1931, in the Crouse-Irving Hospital, Syracuse, of injuries received in an automobile accident.

George Royal, Des Moines, Iowa; New York Homeopathic Medical College, 1882; professor of materia medica and therapeutics, 1892-1922, and for eighteen years dean, State University of Iowa College of Homeopathic Medicine, Iowa City; aged 78; died, Dec. 27, 1931, of diabetes mellitus.

Samuel Robinson Knight ✠ Spring Lake Beach, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1894; formerly member of the school board and board of health; aged 59; died, Nov. 24, 1931, in the Monmouth Memorial Hospital, Long Branch.

Emile Casper Joseph ✠ Corvallis, Ore.; University of Oregon Medical School, Portland, 1914; served during the World War; on the staff of the Corvallis General Hospital; aged 41; died, Dec. 12, 1931, in the U. S. Veterans' Hospital, number 77, Portland.

Herbert Llewellyn Towne, Schenectady, N. Y.; New York Homeopathic Medical College and Hospital, 1900; member of the Medical Society of the State of New York; police surgeon; aged 63; died, Dec. 22, 1931, of carcinoma of the stomach.

Peter Christian Clemensen ✠ Chicago; Northwestern University Medical School, Chicago, 1902; formerly member of the school board; aged 58; on the staff of the Woodlawn Hospital, where he died, January 5, of nephritis and urinary sepsis.

Frank Jay Myers ✠ Green Springs, Ohio; University of Cincinnati College of Medicine, Cincinnati, 1929; served during

the World War; aged 32; died, Dec. 31, 1931, in a local hospital, of embolism, following an operation for appendicitis.

Claude Lester Goodall ✠ Waco, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1909; on the staffs of the Central Baptist Sanitarium and the Providence Sanitarium; aged 45; died, Oct. 6, 1931, of angina pectoris.

James Robert Fuller, Andover, Mass.; Bellevue Hospital Medical College, New York, 1875; member of the Massachusetts Medical Society; aged 83; died, Dec. 11, 1931, of chronic myocarditis, nephritis and hypertrophy of the prostate.

Horace Smith McClymonds, Wilkinsburg, Pa.; Medical Department of the University of the City of New York, 1883; member of the Medical Society of the State of Pennsylvania; aged 74; was killed, Dec. 24, 1931, by an automobile.

Frederick Hasse, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1883; aged 87; died, Dec. 29, 1931, in the German Deaconess Hospital, of myocarditis, following an operation for carcinoma of the prostate.

Orion Irving Bemis ✠ Riverbank, Calif.; Medical School of Maine, Portland, 1896; mayor of Riverbank; county health officer; formerly member of the school board; aged 62; died, Dec. 7, 1931, in Modesto, of heart disease.

Margaret Josephine Mahoney, San Francisco; Cooper Medical College, San Francisco, 1895; member of the California Medical Association; aged 73; died, Dec. 7, 1931, as the result of injuries received in a fall.

Thomas Young Greet ✠ Gadsden, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1907; served during the World War; on the staff of the Forrest General Hospital; aged 50; died, Dec. 12, 1931.

Francis Edwin Comstock ✠ Wellsville, N. Y.; Medical Department of the University of the City of New York, 1883; aged 71; on the staff of the Jones' Memorial Hospital, where he died, Dec. 10, 1931, of heart disease.

Edgar A. Nugent, Unionville, N. Y.; Bellevue Hospital Medical College, New York, 1891; member of the Medical Society of the State of New York; aged 76; died, Dec. 19, 1931, of atrophic cirrhosis of the liver.

Elmer Ellsworth Langley ✠ Los Angeles; Baltimore Medical College, 1905; member of the Washington State Medical Association, and the Pacific Coast Oto-Ophthalmological Society; aged 50; died, Nov. 12, 1931.

Walter Claudius Bradford, Shawnee, Okla.; University Medical College of Kansas City, Mo., 1901; member of the Oklahoma State Medical Association; aged 53; was found dead in bed, Nov. 24, 1931, of heart disease.

George Victor Janvier ✠ Lansdowne, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1906; formerly instructor in obstetrics at his alma mater; aged 50; died, Dec. 17, 1931, of tuberculous meningitis.

Charles M. Routh, Harrison, Ark.; University of Arkansas School of Medicine, Little Rock, 1905; member of the Arkansas Medical Society; health officer of Harrison; aged 59; died, Nov. 27, 1931, of pneumonia.

William B. Martin, Indianola, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1886; member of the Mississippi State Medical Association; aged 73; died, Nov. 23, 1931, of myocarditis.

Mortimer Lambert Hildreth ✠ Lyons, Neb.; Rush Medical College, Chicago, 1880; past president and secretary of the Nebraska State Medical Association; aged 81; died, Dec. 4, 1931, of angina pectoris.

Wilfred Gardner Brown ✠ Plymouth, Mass.; Harvard University Medical School, Boston, 1884; on the staff of the Jordan Hospital; aged 74; died, in December, 1931, of sarcoma of the right femur.

Alfred Griffith, McAlester, Okla.; University of Maryland School of Medicine, Baltimore, 1866; member of the Oklahoma State Medical Association; Civil War veteran; aged 87; died in November, 1931.

Charles Auguste Wilson-Prevost, Paris, France; University of Paris Faculty of Medicine, Paris, France, 1897; formerly a practitioner in New York; aged 62; died, Dec. 19, 1931, of embolism.

John William Shaw ✠ Newburyport, Mass.; Baltimore Medical College, 1906; on the staffs of the Jaques Hospital and the Newburyport Hospital; aged 56; died, Dec. 5, 1931, of angina pectoris.

Joseph Isaiah Smith ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1894; for thirty-five years on the staff of the Lankenau Hospital; aged 68; died, Dec. 23, 1931, in Ardmore, Pa.

D. C. Hinshaw, Ridge Farm, Ill. (licensed, Illinois, 1882); member of the Illinois State Medical Society; aged 73; died, Dec. 11, 1931, of cerebral hemorrhage, mitral regurgitation and myocarditis.

Burton D. Little, Winterset, Iowa; Drake University Medical Department, Des Moines, 1894; member of the Iowa State Medical Society; aged 62; died, Dec. 2, 1931, of cerebral hemorrhage.

Maurice Brent Haslam ✠ Buffalo; Dalhousie University Faculty of Medicine, Halifax, N. S., Canada, 1923; aged 38; died, Dec. 25, 1931, of injuries received in an automobile accident.

Lester Keller, Santa Monica, Calif.; Medical College of Ohio, Cincinnati, 1883; member of the American College of Surgeons; aged 72; died, Nov. 30, 1931, of cerebral hemorrhage.

John J. Driscoll, Chicago; Rush Medical College, Chicago, 1891; member of the Illinois State Medical Society; aged 73; died, January 5, of cerebral hemorrhage and arteriosclerosis.

Mary E. Doolittle, New Haven, Conn.; College of Physicians and Surgeons, Boston, 1892; aged 79; died, Nov. 29, 1931, in Hamden, of myocarditis and ulcer of the stomach.

Walter Fletcher Edmundson, Pittsburgh; Hahnemann Medical College of Philadelphia, 1871; aged 85; died, Nov. 22, 1931, in the Homeopathic Hospital, of cerebral hemorrhage.

William H. Williams ✠ Dale, Ind.; American Medical College, St. Louis, 1886; formerly member of the state legislature; aged 69; died, Dec. 19, 1931, of lymphosarcoma.

Frederick A. Hodson, Long Beach, Calif.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1882; aged 81; died, Oct. 2, 1931.

William Macauley Powell, Clayton, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1884; aged 69; died, Dec. 13, 1931, of coronary thrombosis.

Fred Drury Hollenbeck ✠ Chicago; Rush Medical College, Chicago, 1895; on the staff of the American Hospital; aged 68; died, September 25, of myocarditis.

John Edwin Froom, Boise, Idaho; American Medical Missionary College, Chicago, 1899; aged 64; died, Dec. 2, 1931, in Orlando, Fla., of paralysis agitans.

Mark Robbins Seay, Fernbank, Ala. (licensed, Alabama, 1879); aged 79; died, Dec. 10, 1931, in the Fite Hospital, Columbus, Miss., of edema of the lungs.

Lester L. Cox, Locust Valley, N. Y.; College of Physicians and Surgeons, Baltimore, 1887; aged 70; died, Dec. 6, 1931, of asthma and cirrhosis of the liver.

Lucien Edward Murray, Roanoke, Ind.; Rush Medical College, Chicago, 1880; aged 78; died, Dec. 11, 1931, of mitral stenosis and edema of the lungs.

Carter Stanard Cole ✠ New York; University of Virginia Department of Medicine, Charlottesville, 1887; aged 69; died, Dec. 30, 1931, of heart disease.

John D. Coghlan ✠ New York; Long Island College Hospital, Brooklyn, 1910; aged 62; died suddenly, Dec. 31, 1931, of cerebral hemorrhage.

Emil H. Raschke ✠ La Grange, Ill.; Hahnemann Medical College and Hospital, Chicago, 1906; aged 63; died, Nov. 21, 1931, of heart disease.

John Miller Hyson ✠ Red Lion, Pa.; College of Physicians and Surgeons, Baltimore, 1875; aged 81; died, Oct. 24, 1931, of pneumonia.

Wolrad Winterberg, San Francisco; College of Physicians and Surgeons in the City of New York, 1882; aged 87; died, Oct. 12, 1931.

Charles Sumner Durand, San Diego, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1887; aged 76; died, Oct. 24, 1931.

William F. Green, Cambridge City, Ind.; Louisville (Ky.) Medical College, 1889; aged 66; died, Dec. 11, 1931, of cerebral hemorrhage.

Max I. Birenbaum, St. Louis; Barnes Medical College, St. Louis, 1900; aged 68; died, Dec. 14, 1931, of lobar pneumonia.

Ivy Thompson Goldin, Cedartown, Ga.; Hospital Medical College, Atlanta, 1910; aged 47; died, Dec. 2, 1931, of influenza.

Dumont Dwire, Los Angeles (licensed, California, 1897); aged 70; died, Oct. 26, 1931, of acute dilatation of the heart.

Francis O. Drake, St. Louis; St. Louis Medical College, 1866; aged 91; died, Dec. 2, 1931, of senility.

William Kernaghan, Los Angeles; Detroit College of Medicine, 1889; aged 66; died, Oct. 12, 1931.

Bureau of Investigation

ELECTROVITA

Weak Lime Water Plus Hokum

"Electrovita" is said to be manufactured by the Electrovita Company, Inc., of Norwalk, Ohio, which has for its general distributors the Electrovita Sales Company of the same city. According to the label, Electrovita is an "artificial mineral water." It is described a little more in detail thus:

"A moderately mineralized alkaline, calcic, saline water. . . . Intended to combat excess acid and to assist nature in the elimination of waste matter. Not a specific or cure. Not habit forming."

The directions state that one quart daily should be taken. These claims are mild and conservative as become statements that come under the National Food and Drugs Act which prohibits fraudulent claims on the trade package. The public is told that Electrovita is simply water that has been "treated by electrolysis."

But the entire trend of such advertising as is *not* on the trade package and therefore not subject to the Federal law, is to make the public believe that this city tap water, that has been subjected to electrolysis, has taken on some esoteric qualities that changes it from ordinary hydrant water into a veritable catholicon—a panacea for whatever may ail you. The printed circulars of Electrovita deceive by implication. The "lie direct" is avoided, but the "lie with circumstance" looms large to those who have any scientific training. Evidently, the concern is learning by experience, for some of the leaflets that were put out about a year ago contained such claims as the following:

"ELECTROVITA is water purified and treated by electrolysis in a manner which renders the resultant Electro-Chemical product so great in absorbent properties that it must result in the elimination of bacteria, foul matter, acidity and decay. No disease or health-injuring abnormality can exist where Electrovita is present."

"ELECTROVITA contains all the elements necessary for the maintainance of the human body. There are only three places outside of the earth itself where these elements are found in solution and they are the human body, raw cow's milk and ELECTROVITA."

"ELECTROVITA will eliminate almost any disease but is immediately effective in all stomach, blood, kidney, heart and throat troubles. All cases of pneumonia and influenza can be brought out of danger inside of twelve hours. A tumor can be dissolved and carried off in from four to six weeks and other growths can be removed accordingly."

Electrovita, it seems, is being pushed in various parts of the country by high-pressure salesmen. The "Electrovita Sales Manual," a well-printed, loose-leaf affair, used as a means of priming salesmen for their sales talk makes interesting reading. For instance:

"Electrovita is not a chemical concoction but is strictly a product of electrolitic action. It would be chemically impossible to mix these elements together as separate chemicals as the operation would only result in an explosion."

This claim doubtless impresses the layman with the marvelous potency of Electrovita. The Sales Manual also warns the representative not to violate technically the medical practice acts. The salesman is told to ask the prospect at the outset what his doctor says is the matter with him. This absolves the salesman from the charge of making a diagnosis, but permits him to tell the prospect what he may expect from Electrovita. Both the printed leaflets and the Sales Manual declare that the exploiters of Electrovita do not recognize specific disease or promise a specific cure. In the Sales Manual, however, we find references to specific conditions. For instance:

"CANCER—A malignant tumor. We will not give a guarantee in any Cancer case but if the growth is inside the stomach where the water will reach it directly we stand an excellent chance of dissolving it. If it is an external Cancer there is a good chance of healing it up with external applications in the form of compresses with the external Electrovita in addition to the quart per day internally."

"ARTHRITIS—Inflammation of a joint. Chronic Arthritis is the slow accumulation of a chalky substance in the joints that gradually dries up the lubricating fluid there and the bones become ankylosed or, in other words, grow together. Once the joint has become ankylosed, there is nothing that can help it, but if there is still some mobility, Electrovita can clear it up. We will never give a guarantee on a case that is of more than three years standing."

Especially enlightening are the instructions given to the salesman as to how to approach a victim with tuberculosis, thus:

"TUBERCULOSIS—Pulmonary. You will be safe in accepting any case of the above, except where the customer is obviously too weak and seems about to pass out, but do not turn down any one. In all cases never promise complete recovery on less than 75 gallons of Electrovita, and in an advanced case it will take at least 100 gallons."

The statement that the salesman should not "turn down any one" with tuberculosis, presumably means any one who has money enough to pay for Electrovita! In the same Sales Manual, we are told that "tuberculosis of the throat will respond quickly" to the use of Electrovita; that in treating catarrhal conditions, Electrovita should not only be drunk but be used as a douche; in cases of cataract, the salesman is not to claim to be able to restore the eyes to normal sight by Electrovita, but can say that in all cases "almost immediate relief can be promised," the Electrovita to be taken both internally and used as an eye-wash.

In cases of pyorrhea, the prospective victim is told to use Electrovita and also "Dentone," which is said to be "an Electrovita Product." Goiter of the non-toxic variety, the salesman is assured, "will reduce very rapidly" following the use of Electrovita, but even the toxic variety may be completedly relieved if the sufferer will drink 50 gallons. Then, we read:

"SYPHILIS—Comes under the head of blood 'diseases' and responds readily to Electrovita. Almost all cases of Syphilis are tested by either the Wassermann or Noguchi tests, and usually by both. In the report each + represents so many bacteria in a given quantity of blood and ++++ is the maximum. Electrovita will reduce this one + per month if the customer will go on a milk diet as explained above, but in any case (except Locomotor Ataxia) a negative test can be guaranteed in five months at the utmost."

"FEMALE TROUBLE—All female trouble responds very quickly to the Electrovita, as it can be used directly upon the infected organs. To reach the trouble directly and thus accomplish immediate relief, heat about half a pint of Electrovita diluted about half with distilled water to body warmth and have the customer use as a douche once per day. Gradually reduce the amount of distilled water till the customer is using all Electrovita, taking about one month to do this. As a rule, female trouble can be eliminated with about thirty to forty gallons of Electrovita."

Nor is the treatment of venereal disease neglected:

"VENEREAL DISEASES—In all cases of Gonorrhea, have the customer dilute enough Electrovita for the ordinary syringe, heat to body warmth and inject into the penis two or three times daily. Use about three parts distilled water and one of Electrovita, gradually reducing the distilled water.

There are many other specific pathologic states that are discussed in this Sales Manual, all of which, if we believe the Manual, may be relieved or cured by the use of Electrovita. Of course, no Sales Manual would be complete without testimonials, which fill the latter part of the Electrovita Sales Manual. The testimonials lead off with one from J. Atwood Whitaker, M.D., of San Francisco. Then follow puffs from individuals who claim to have been cured of such conditions as "stomach and blood disorders," sore feet, infection following an automobile accident, duodenal ulcer, sinus trouble, chronic arthritis, pulmonary tuberculosis, etc.

Early in December, 1931, a representative of the Electrovita Sales Company came to Chicago and asked over the telephone for an interview with the Director of the Bureau of Investigation. He was told that interviews and verbal statements are unsatisfactory, in cases of this kind; that the Bureau would be pleased to receive by letter any information that the Electrovita Sales Company saw fit to send, together with any information that they might give regarding the product. In due time, a letter came from Mr. M. D. Gentry, Director of the Department of Personal Service of the Electrovita Sales Company of Norwalk, Ohio.

Incidentally, on the stationery of the Electrovita Sales Company appeared the name, "R. G. Mertens, M.D., Chief Consultant." According to the records of the American Medical Association, there is no man by the name of R. G. Mertens who is a graduate of any reputable medical school. The files do show one R. G. Mertens of Columbus, Ohio, listed as an osteopath. An inquiry directed to Dr. H. M. Platter, Secretary of the State Medical Board of Ohio, on this point brought a reply stating that Mertens is a graduate of the Des Moines School of Osteopathy, and also claims graduation from the Kansas City University of Physicians and Surgeons, an institution that is said to be not recognized by forty-seven states,

The Electrovita Sales Company also sent to the Bureau of Investigation a copy of a report puffing Electrovita, said to have been made by Dr. Joseph D. Ely of Hudson, Mich. There was, too, a copy of an analytical report made by the Columbus Laboratories on Electrovita which merely showed that calcium salts were the chief ingredient of the product. In addition, there was a copy of a letter purporting to be from S. C. Dinsmore, Commissioner of Food and Drugs Control of Nevada. This letter stated that that department of the state had examined and analyzed the sample of Electrovita and found it to be strongly alkaline, due to calcium hydroxide. Mr. Dinsmore, who, so far as we know, has no medical training, also declared that Electrovita could be used as "a remedy for sour stomach, diarrhea, dysentery, diabetes, gravel, dyspepsia, etc." There was also a copy of an analysis made by the Pittsburgh Testing Laboratory of Pittsburgh, Pa., which brought out nothing new but showed that calcium hydroxide was the chief ingredient. Still another analysis from the Board of Food and Drug Commissioners of the State of Rhode Island, which also stated that calcium is the chief ingredient and that Electrovita is "a saline water, the drinking of which may serve several useful and medicinal properties."

There was the usual testimonial from local bankers. Any one who is at all familiar with the history of nostrum exploitation must have been struck by the ease with which men in this business are able to get testimonials from their bankers. From the copy submitted it appears that the president of the Huron County Banking Company of Norwalk, Ohio, declared, under date of June 24, 1931, that the Electrovita Company of their city did business with the bank, carried a substantial balance, and was "very successful." He stated, further, that from the fact that the Electrovita concern was shipping out huge quantities of the product daily, it would seem quite conclusive that "some one was surely getting results." A similar letter from the same bank to the Springfield (Ohio) Chamber of Commerce was also submitted.

Then, too, of course, the Norwalk Chamber of Commerce also furnishes a testimonial, written to the Association of Commerce at Madison, Wis., and notifying the latter that the Electrovita Sales Company was a "very reliable, thriving company" and that the product itself was regarded by those who have taken treatment "as a very beneficial relief and cure for many ailments and diseases."

In addition, the Electrovita people submitted a long statement from Ralph E. Sunderland, described as the founder of the Sunderland Laboratories of Toledo, Ohio, in which Electrovita was inordinately puffed. From material in the files, it appears that the Sunderland Laboratories sells a so-called urinalysis service. The type of service that is given is indicated by a report made by the Sunderland Laboratories on an individual whose urine, even according to the report, showed practically no abnormalities, other than indican. The "laboratory" furnishes with its reports what are described as "Interpretation of the Findings," and in this particular instance, the patient was told that his condition was due, among other things, to "osteopathic lesions"! In another urinalysis made for another patient, "Whole Grain Wheat" was recommended as part of the diet. R. E. Sunderland used to be connected with the concern that put Whole Grain Wheat on the market, in the capacity of vice-president of the rather imposingly-named "American Educational Food Council," which was merely an advertising accessory to the Whole Grain Wheat Company. Ralph E. Sunderland is not a graduate of any reputable medical school, nor, is he known in the scientific world. The Bureau of Investigation also has a record of one Ralph E. Sunderland who, according to the Federal authorities was indicted in Omaha, in February, 1923, for his operations in connection with the Colonial Timber and Coal Corporation of that city. Sunderland was convicted; he appealed and the case was reversed and remanded for a new trial. At the subsequent trial he was found guilty and in November, 1929, was sentenced to pay a fine of $5,000.00.

Although, as has been stated, the Electrovita people furnished analyses of their product from the Food and Drug Commissioner of Nevada and the Food and Drug Commissioner of Rhode Island, they did not furnish any analysis from the Food and Drug Department of the state in which Electrovita is made—Ohio—although the Dairy and Food Department of that state had analyzed it and reported that Electrovita was, essentially, lime water of about one-half the strength of lime water U. S. P.

In order that THE JOURNAL could speak authoritatively regarding the composition of Electrovita, an original bottle of this nostrum was submitted to the A. M. A. Chemical Laboratory for examination. The chemists' report follows:

LABORATORY REPORT

"One original bottle of Electrovita (Electrovita Company, Inc., Norwalk, Ohio) was submitted to the A. M. A. Chemical Laboratory for examination. The bottle contained 3,860 cc. (approximately one gallon) of a colorless, practically odorless liquid, possessing an alkaline taste; a very small amount of white residue was in the bottom of the container. The solution was alkaline to litmus and to phenolphthalein. The specific gravity at 20 C. was 1.001.

"Qualitative tests indicated the presence of calcium (Ca^{++}), a very small amount of sulphate (SO_4^{--}), traces of chloride (Cl^-) and of negligible amount of bicarbonate (HCO_3^-). Quantitative determinations on the solution yielded the following:

"Total solids (180 C.)	0.10 per cent
"Ash (1,000 C. for 2 hours)	0.07 per cent
"Titratable hydroxide* (OH^-)	0.03 per cent
"Calcium (Ca^{--})	0.04 per cent
"Sulphate (SO_4^{--})	0.008 per cent

* *Alkalinity.*—The amount of fiftieth-normal sulphuric acid required to neutralize one liter of Electrovita, using methyl orange as indicator, was found to be 969 cc. When phenolphthalein indicator was used, it was found that 926 cc. of fiftieth-normal sulphuric acid were required to neutralize one liter of Electrovita. The procedure is the one described under Alkalinity in Standard Methods for the Examination of Water and Sewage, published by the American Public Health Association, Sixth Edition, Fifth Impression, 1930, page 32.

"From the foregoing, it may be calculated that Electrovita consists essentially of 0.068 Gm. of calcium hydroxide (hydrated lime—$Ca(OH)_2$) in 100 cc., with a very small amount of calcium sulphate (0.01 per cent). This is equivalent to approximately 49 per cent of the strength of lime water U. S. P. (which contains 'not less than 0.14 Gm. of $Ca(OH)_2$ at 25 C.'). For practical purposes, a similar solution may be made by diluting ordinary lime water (U. S. P.) with an equal portion of water."

The closing sentence of the chemists' report tells the story. Electrovita, so far as the finished product is concerned, and that is all that matters from the standpoint of the purchaser, is essentially lime water of half the strength of the official (U. S. P.) product. Whether Electrovita is made by the action of the electric current on the city water of Norwalk, Ohio, or whether it is made by adding water to lime water, makes no difference—except from an advertising standpoint. It would be difficult for the Electrovita people to persuade the public that they have the marvelous panacea that they claim, if they admitted that their preparation was merely ordinary, official lime water, half-strength. Furthermore, they would not be able to use the name Electrovita, which in itself must be an advertising asset of no mean worth.

A gallon of Electrovita costs—or to be more correct, sells for—two dollars ($2.00). For those who want a similar product minus the advertising hokum, we suggest that they take one cent's worth of lime and put it in a half-gallon of city water. After standing for some hours, in order that the water may become saturated with the lime, this half-gallon is poured off and diluted with another half-gallon. At no greater expenditure than one cent, one may have the therapeutic equivalent of a gallon of Electrovita.

For those who have nothing seriously the matter with them and are able, in these parlous financial times, to pay a fancy price for weak lime water, there may be no serious objection to the purchase of Electrovita. For those persons, however, who are suffering from cancer, tuberculosis and any other serious condition, and who may be led to believe by the sales talk of the Electrovita representatives that they can be cured by taking this nostrum, the situation is much more serious.

Whether the men who are behind the Electrovita Company are self-deluded enthusiasts or unconscionable quacks makes little difference, so far as the end results of this exploitation may be concerned. In a properly-ordered society, where the health of the public should be the first consideration, a product of this sort could not be sold under the methods used in the exploiting of Electrovita.

Correspondence

"THE PRESENT STATUS OF THE ANESTHESIA PROBLEM"

To the Editor:—Dr. Bevan in his article on the present status of the anesthesia problem (THE JOURNAL, Nov. 21, 1931) apparently condemns without reservation intratracheal ether anesthesia, stating that "the method is dangerous, it is complicated, and it possesses advantages in a very few cases." Unfortunately, Dr. Bevan has not differentiated between the Meltzer and Auer insufflation technic, which was popular twenty years ago, and the simplified inhalation method now available, and in use during the last four years (*Arch. Otolaryng.* **5**:394 [May] 1927; **7**:156 [Feb.] 1928). This omission was so obvious that it did not seem necessary to request space for its refutation. Since that time, however, comments emanating from Dr. Bevan's article suggest the desirability of submitting the following letter from one of my professional colleagues. This communication, which was unsolicited, reflects the general attitude observed by me toward intratracheal anesthesia in its generic sense with specific reference to the inhalation method which I employ.

As I called your attention to the article in which Dr. Bevan criticizes the method of anesthesia which you use, and which you have brought to such perfection, it seems to me that I ought to send you a word of assurance as to how I feel on the subject. One can quite see that in the hands of an incompetent operator there might be accidents resulting from the use of the method of intratracheal insufflation of ether, but that is not a fair test. As you know, my attention was first attracted to the method through its use by Mr. Magill of London. I have employed it in very many cases in Paris, Madrid, London and elsewhere, and it was on the basis of this early experience that on one occasion I recommended it to you. Since then, as you know, whenever I have had to give a general anesthesia, and that has been many, many times, I have insisted on the use of this method, and by you. I do not recall, in all that time, any after-effect more serious than a slight cough, which never lasted more than two or three days. I rather regret that what came under Dr. Bevan's notice did not include your long record of notable success.

J. EASTMAN SHEEHAN.

It was with a view of avoiding the difficulties incidental to the use of the insufflation method that the present technic has been developed. Motor driven apparatus, reducing valves, positive pressure, and complicated machinery are altogether eliminated in this technic. Briefly, the patient, if an adult, is anesthetized by the gas-ether sequence, by the closed method (whose pleasant and effective control is seldom questioned). When relaxation is arrived at, laryngoscopy and intubation are done with a specially devised tube. From the time of intubation, the patient breathes naturally through the tube any anesthetic agent desired. There is no irritation to the cords following this technic. Repeated intubation is not followed by ill effects.

PALUEL J. FLAGG, M.D., New York.

CHARACTER OF THE FEE SPLITTER

To the Editor:—The weakness of most editorials on the subject of fee splitting seems to lie in incomplete analyses of the reasons underlying the practice and the lack of corrective suggestions.

The editorial on fee splitting (THE JOURNAL, Dec. 5, 1931, p. 1710) covers the "old ethical problem" in the same old ethical way. It assigns the reason for fee splitting largely to economic necessity and in so many words implies both that dishonesty pays and that a doctor can make more money by fee splitting than by assiduously building a legitimate and ethical practice.

My personal opinion is that the cause of rebating and fee splitting, in probably 75 per cent of all cases, is personal inefficiency on the part of the doctor. Where such inefficiency is found there generally exists a concomitant dishonesty.

When a doctor stoops to fee splitting he brands himself an inferior. He cannot win in honest competition with other doctors so he gets together with another of his kind to fight unfairly, the patient and his profession being the victims. Perhaps some rebating can be laid to competition, but the fundamental reasons are lack of ability, lack of principle, and lack of honor.

An intelligent doctor, properly trained and educated and with good business judgment, is almost sure to be a success financially, professionally and ethically. Of course, he may split fees and still be a success financially. However, in the long run splitting fees will bring him less financially than would the determined effort to enlarge his practice through legitimate and ethical channels.

Would it not do some good to brand the fee splitter for what he really is—a weakling?

LLOYD MILLS, M.D., Los Angeles.

Queries and Minor Notes

SYPHILIS IN LATE RECURRENT SECONDARY STAGE

To the Editor:—I have under my care and treatment a woman of limited means; for the past two years she has had a peculiar skin disease of the forearm and knee with no history of primary infection. The Wassermann reaction was 4 plus at the beginning of treatment. The patient was put on potassium iodide, 10 grains (0.65 Gm.), three times a day, and yellow mercurous iodide, one-fourth grain (16 mg.) three times a day orally; at the same time neoarsphenamine, 0.6 Gm., was given once a week for six injections, followed immediately with bismuth sodium tartrate, intramuscularly, twice a week for twelve injections. The skin condition on the forearm and knee cleared completely, and the patient was apparently well and healthy. The Wassermann test after this treatment was unchanged. The patient was given rest for two months; iodides and mercury compounds were continued during this time intermittently. The Wassermann reaction, taken at the end of two months, was 3 plus. I advised another series of injections. Six injections of neoarsphenamine, 0.6 Gm., were administered, followed by twelve injections of bismuth preparations; this time quinine bismuth iodide and bismuth sodium tartrate were alternated. After this series of injections, the Wassermann reaction was negative. Two months' intermission was given, during which time mercury preparations and iodides were given; the Wassermann reaction was 3 plus. A third series of neoarsphenamine with bismuth was administered; the Wassermann reaction was 4 plus after this treatment. The patient discontinued treatment for three months, with the exception of the mercury compounds and iodides, which were continued as before, during intermission, and the Wassermann reaction following this treatment was negative. Another series of injections was advised, to be given immediately; the Wassermann reaction a few weeks later was 4 plus. Would you consider this patient Wassermann fast? What suggestions could you offer as to the further care and treatment? Would you consider this patient infectious to others. As yet, her second husband has not had any symptoms or a positive Wassermann reaction. Please publish answer.

M.D., Florida.

ANSWER.—This is not an instance of so-called Wassermann fastness, because twice during the course of treatment the reaction has been rendered negative. Reappearances of the positive reaction under such conditions constitute Wassermann recurrences and are to be expected when a lapsing form of treatment is employed. Fixation of the positive Wassermann reaction is apt to occur after a series of such relapses.

For radical cure of syphilis, complete extermination of the infection is the therapeutic target. Mercury preparations by mouth, with or without iodides, have no place in such a therapy. When radical cure is found to be impossible, appropriate therapeusis aims to prevent the extension of already established, and the suppression of future, pathologic processes. The two factors that determine the therapeutic procedure are usually the type and duration of the disease when treatment is begun, and the character of response to a standard form of treatment, after six months' trial.

From the brief description of the lesions, this patient probably has late recurrent secondary syphilis and, if so, has more than an even chance of radical cure. The prognosis is further improved by the demonstration of two negative Wassermann reactions, resulting from brief courses of treatment. Indications for treatment are therefore as follows:

1. Continuous therapy, without periods of lapse, and all medication except iodides should be given by intravenous and intramuscular routes.

2. Courses of arsphenamine should be alternated with courses of bismuth. These drugs should not be given concurrently. Main dependence should be placed on the arsphenamines, and

bismuth should be regarded as interim treatment, in order to make the therapy a continuous one.

3. Iodides by mouth should be administered as an adjuvant, for their soluble effect on inflammatory processes, in the hope that areas of diseased tissues will be rendered more penetrable for the antispirochetal drugs. The iodides may be taken with courses of both the aforementioned drugs, two months of iodide ingestion, as a course, and one month withdrawal of the drug between such courses.

A course of arsphenamine should be six or eight doses at weekly intervals. Bismuth courses should begin immediately after arsphenamine courses and should consist of weekly intramuscular injections covering from six to twelve weeks. As the treatment progresses, the number of doses per course should be reduced to six for arsphenamine and increased to twelve for bismuth. Dosage of all drugs should be so adjusted as to coincide with the patient's tolerance for a long drawn out, continuous treatment. In general, the dose of arsphenamine should be 0.3 Gm. for a woman and 0.4 Gm. for a man. An insoluble bismuth compound in doses of 0.2 Gm. once a week is preferable to soluble preparations of this drug, both for economic reasons and for its prolonged action. Potassium iodide should be given in fairly large amounts, the dosage being gradually increased; it need not exceed 8 Gm. a day. If the drug is not well tolerated in small doses, larger doses may be more tolerable.

It is desirable to have frequent testing of the blood Wassermann reaction. This need not necessarily greatly increase the cost to the patient. If state or municipal laboratories are available there will be no cost, and some of the large laboratories in the country provide this service at reduced costs.

Duration of the whole treatment must be more than a year. The difficult approximation of time necessary for presumptive cure makes empiricism necessary. Experience has shown that after the Wassermann reaction has become and remains negative, one entire year of additional treatment, continuously administered, is necessary for safeguarding the result.

A sine qua non of syphilotherapy is the preliminary, thorough study and understanding of the patient's clinical status. Involvement of visceral organs in the morbid process calls for drastic modification of the plan of management. Neurosyphilis requires other procedures not included in the plan. Much harm may be done the patient with aortic or cardiovascular disease, and valuable time may be lost for the one with incipient dementia paralytica (THE JOURNAL, April 18, p. 1332, second paragraph of answer to query on treatment of syphilis).

The question of infectiousness seems to be answered by the patient's failure to transfer the infection to her husband, who obviously has been exposed to a greater risk than any one else might be. Late syphilis is not especially contagious, except in marital relationship. A more immediate danger of contagion is the possibility of congenital syphilis of her offspring. In the event of a pregnancy, institution of treatment early in pregnancy, continued to term, will insure a syphilis-free infant.

CAUSE OF STILLBIRTH

To the Editor:—A woman, aged 33, a primipara whose confinement had been expected October 15, was found on October 28 to have a blood pressure of 160 systolic and 82 diastolic, and on the following day she was taken to the hospital, where labor was induced by the following treatment: 8:30, oleum ricini, 30 cc.; 9:30, enema; 10:30, quinine sulphate, 10 grains (0.6 Gm.); 12:30, quinine sulphate, 10 grains (0.6 Gm.); 4:30, pituitary extract, 0.5 cc.; 5:30, pituitary extract, 0.5 cc. Pains started at 6:30, and by 8 o'clock they were quite severe and the patient was very restless, so she was given pentobarbital sodium, 1 grain (0.065 Gm.) and inhalations of chloroform when the pains occurred. At 10:30 the pains seemed to be ineffectual and progress was delayed, so she was given 0.5 cc. of pituitary extract, and the baby was delivered at 11:30. At once I noticed blanched areas on the baby's body and stated that it was dead. Resuscitation methods were of no avail. The patient stated that she felt fetal movements throughout the earlier part of the day, but I was unable to get the heart sounds with the stethoscope any time during the evening. Would the fact that her only previous pregnancy terminated at six and a half months have any bearing on her present experience? The patient's blood Wassermann reaction was negative and a specimen taken from the coronary sinus of the child was reported as being unsatisfactory for examination. Please omit name and address.

M.D., Washington.

ANSWER.—There are a number of possible causes for the fetal death in this case. It is hardly likely that the hypertension, the pentobarbital sodium or the chloroform could have produced the fatality. However, the 20 grains of quinine or the 1.5 cc. of solution of pituitary may have been responsible for the death of the fetus. There are undoubtedly cases of fetal death due to quinine, but these are rare. On the other hand, the number of infants killed each year by pituitary extract can only be surmised, for few of these cases are reported. It is the unanimous opinion that pituitary extract, especially in such large doses as were administered to the patient in question, when given at the end of the first stage and especially during the second stage of labor, may cause the death of an infant. The pituitary extract produces violent contractions of the uterus, which in turn result in obstruction of the blood supply to the fetus and also in direct compression of the fetal head. Both of these factors may bring about death of the fetus. At autopsy on such stillborn children, the brain shows marked congestion and numerous pinpoint hemorrhages.

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To the Editor:—I should greatly appreciate your opinion and suggestions on the following prescription:

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Aqua Rosae ..... ♏xiij
M. Sig: Gt. j in each eye, p. r. n.

Is it stable? If not, what would you advise as to its stability? I have used this preparation rather extensively in cases of hay fever. How would you improve on it? What has been your experience with "Estivin" and is there a Pharmacopeial preparation equivalent to "Estivin"? Please omit name.

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ANSWER.—Oil of maize (corn oil) would probably do as well for the purpose.

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Washington July Report

Mr. Charles Maybury, director, Washington Department of Licenses, reports twenty physicians licensed by examination, fifteen physicians licensed by reciprocity with other states, three physicians licensed by endorsement of credentials, and two osteopaths licensed to practice osteopathy and surgery at a meeting held in Seattle, July 13-14, 1931. The following colleges were represented:

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College	Year Grad.	Number Passed
College of Medical Evangelists	(1931, 4)	4
Rush Medical College	(1927), (1931, 2)*	3
Northwestern University Medical School	(1931, 2)	2
University of Louisville School of Medicine	(1929)†	1
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University of Minnesota Med. Sch.	(1924)†, (1931), (1931)†	Minnesota
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bismuth should be regarded as interim treatment, in order to make the therapy a continuous one.

3. Iodides by mouth should be administered as an adjuvant, for their soluble effect on inflammatory processes, in the hope that areas of diseased tissues will be rendered more penetrable for the antispirochetal drugs. The iodides may be taken with courses of both the aforementioned drugs, two months of iodide ingestion, as a course, and one month withdrawal of the drug between such courses.

A course of arsphenamine should be six or eight doses at weekly intervals. Bismuth courses should begin immediately after arsphenamine courses and should consist of weekly intramuscular injections covering from six to twelve weeks. As the treatment progresses, the number of doses per course should be reduced to six for arsphenamine and increased to twelve for bismuth. Dosage of all drugs should be so adjusted as to coincide with the patient's tolerance for a long drawn out, continuous treatment. In general, the dose of arsphenamine should be 0.3 Gm. for a woman and 0.4 Gm. for a man. An insoluble bismuth compound in doses of 0.2 Gm. once a week is preferable to soluble preparations of this drug, both for economic reasons and for its prolonged action. Potassium iodide should be given in fairly large amounts, the dosage being gradually increased; it need not exceed 8 Gm. a day. If the drug is not well tolerated in small doses, larger doses may be more tolerable.

It is desirable to have frequent testing of the blood Wassermann reaction. This need not necessarily greatly increase the cost to the patient. If state or municipal laboratories are available there will be no cost, and some of the large laboratories in the country provide this service at reduced costs.

Duration of the whole treatment must be more than a year. The difficult approximation of time necessary for presumptive cure makes empiricism necessary. Experience has shown that after the Wassermann reaction has become and remains negative, one entire year of additional treatment, continuously administered, is necessary for safeguarding the result.

A sine qua non of syphilotherapy is the preliminary, thorough study and understanding of the patient's clinical status. Involvement of visceral organs in the morbid process calls for drastic modification of the plan of management. Neurosyphilis requires other procedures not included in the plan. Much harm may be done the patient with aortic or cardiovascular disease, and valuable time may be lost for the one with incipient dementia paralytica (THE JOURNAL, April 18, p. 1332, second paragraph of answer to query on treatment of syphilis).

The question of infectiousness seems to be answered by the patient's failure to transfer the infection to her husband, who obviously has been exposed to a greater risk than any one else might be. Late syphilis is not especially contagious, except in marital relationship. A more immediate danger of contagion is the possibility of congenital syphilis of her offspring. In the event of a pregnancy, institution of treatment early in pregnancy, continued to term, will insure a syphilis-free infant.

CAUSE OF STILLBIRTH

To the Editor:—A woman, aged 33, a primipara whose confinement had been expected October 15, was found on October 28 to have a blood pressure of 160 systolic and 82 diastolic, and on the following day she was taken to the hospital, where labor was induced by the following treatment: 8:30, oleum ricini, 30 cc.; 9:30, enema; 10:30, quinine sulphate, 10 grains (0.6 Gm.); 12:30, quinine sulphate, 10 grains (0.6 Gm.); 4:30, pituitary extract, 0.5 cc.; 5:30, pituitary extract, 0.5 cc. Pains started at 6:30, and by 8 o'clock they were quite severe and the patient was very restless, so she was given pentobarbital sodium, 1 grain (0.065 Gm.) and inhalations of chloroform when the pains occurred. At 10:30 the pains seemed to be ineffectual and progress was delayed, so she was given 0.5 cc. of pituitary extract, and the baby was delivered at 11:30. At once I noticed blanched areas on the baby's body and stated that it was dead. Resuscitation methods were of no avail. The patient stated that she felt fetal movements throughout the earlier part of the day, but I was unable to get the heart sounds with the stethoscope any time during the evening. Would the fact that her only previous pregnancy terminated at six and a half months have any bearing on her present experience? The patient's blood Wassermann reaction was negative and a specimen taken from the coronary sinus of the child was reported as being unsatisfactory for examination. Please omit name and address.

M.D., Washington.

ANSWER.—There are a number of possible causes for the fetal death in this case. It is hardly likely that the hypertension, the pentobarbital sodium or the chloroform could have produced the fatality. However, the 20 grains of quinine or the 1.5 cc. of solution of pituitary may have been responsible for the death of the fetus. There are undoubtedly cases of fetal death due to quinine, but these are rare. On the other hand, the number of infants killed each year by pituitary extract can only be surmised, for few of these cases are reported. It is the unanimous opinion that pituitary extract, especially in such large doses as were administered to the patient in question, when given at the end of the first stage and especially during the second stage of labor, may cause the death of an infant. The pituitary extract produces violent contractions of the uterus, which in turn result in obstruction of the blood supply to the fetus and also in direct compression of the fetal head. Both of these factors may bring about death of the fetus. At autopsy on such stillborn children, the brain shows marked congestion and numerous pinpoint hemorrhages.

Extraneous factors may, of course, have been responsible for the death of the child in this case. There may have been a partial separation of the placenta, but there would almost certainly have been some vaginal bleeding before delivery, and the placenta would have contained a large depression covered by a blood clot. Furthermore, since labor was not induced until thirteen days after the calculated date of confinement, the child may have died from postmaturity, but this is hardly probable. If the baby weighed more than 8½ pounds (3.8 Kg.) it might have been postmature. The previous premature termination of pregnancy most likely had no bearing on the patient's present mishap unless the patient had syphilis. It might be well to repeat the Wassermann test on the patient and have a similar test made on the father of the child. If the child had syphilis, even if there were no visible signs of the disease and a necropsy was refused, roentgenograms of the long bones would demonstrate the characteristic changes of this disease.

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University of Nebraska College of Medicine		(1929)†	1
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University of Minnesota Med. Sch.		(1924)†, (1931), (1931)†	Minnesota
St. Louis University School of Medicine		(1930)†	Missouri
University of Oklahoma School of Medicine		(1930)	Oklahoma
University of Oregon Medical School		(1930)	Oregon

Jefferson Medical College of Philadelphia	(1914)	Penna.
University of Pennsylvania School of Medicine	(1926)	Penna.
University of Manitoba Faculty of Medicine	(1924)	N. Dakota

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1931)	N. B. M. Ex.
University of Oregon Medical School		(1929)	N. B. M. Ex.
University of Virginia Department of Medicine		(1928)	N. B. M. Ex.

	LICENSED TO PRACTICE OSTEOPATHY AND SURGERY	Year Grad.	Number Licensed
Osteopaths		(1923), (1926)	2

* The M.D. degree and license of one of these applicants is being withheld pending completion of an internship.
† License is being withheld pending completion of an internship.

Book Notices

On the Edge of the Primeval Forest: Experiences and Observations of a Doctor in Equatorial Africa. By Albert Schweitzer, D.Th., M.D., Ph.D. Translated by C. T. Campion, M.A. Reprinted, 1931. Cloth. Price, $2. Pp. 180, with 16 illustrations. New York: Macmillan Company, 1931.

This interesting volume graphically portrays the experiences of a Strasbourg physician, musician and clergyman during his first four years of service in the Ogowe District, Gaboon Colony, West Africa. The Ogowe River lies north of, and roughly parallels, the Congo. The country is flat and heavily wooded, and the climate is hot, moist and disagreeable. In a dry region the heat would not be oppressive, but the excessive moisture renders the Ogowe lowlands unhealthful for European habitation. The atmosphere is so warm and so damp that successful cultivation of cereals and potatoes is impracticable, and flour, rice, potatoes and milk must be imported. Of the various diseases encountered, malaria was the commonest. Rheumatism occurred with great frequency, and heart complaints were far from rare among the native population. Mental disorders were common and extremely difficult to handle satisfactorily. Trypanosomiasis prevailed in the neighboring district of M'Gomiye but only incidentally at the author's station, Lambarene. Occasionally the natives intentionally administered poison to one another, generally with disastrous effects. The author found his Negro servants loyal, fairly industrious and, when not too greatly tempted, comparatively honest. Alcohol proved a constant menace to their morals as well as to their health. The principal industry is logging, the timber being floated down the Ogowe River in the form of huge rafts. The author concludes that the popular statement "The natives who live in the bosom of nature are never so ill as we are and do not feel pain as much" is not true, and he emphasizes the great material as well as moral value of properly conducted medical dispensaries.

Kurzes Lehrbuch der chemischen Physiologie. Von Dr. Ernst Schmitz, o. ö. Professor an der Universität Breslau. Third edition. Cloth. Price, 19.80 marks. Pp. 441. Berlin: S. Karger, 1931.

On the whole, this is a useful compend on chemical physiology, designed primarily for the medical student. Divided into eighteen chapters, the subject matter is presented in a necessarily abbreviated but readable form. Important omissions occur for the simple reason that the author does not read American literature as extensively as his own. Otherwise he would be familiar with cholecystokinin, the purification of secretin, the originators of the calcium therapy in parathyroid tetany by the oral route, the fact that a man can hunger for forty-two days (which is probably more than "einige Wochen"), and the contributions of Philip Smith in elucidating the symptom complexes in lesions in and about the hypophysis. Although many of these important researches were first published in THE JOURNAL, the latter is not cited.

Infections of the Kidney. By Meredith F. Campbell, M.D., F.A.C.S., Attending Urologist, Babies Hospital, New York City. Harper's Medical Monographs. Fabrikoid. Price, $3. Pp. 343, with 40 illustrations. New York: Harper & Brothers, 1931.

This book gives concisely the present status of the teachings on renal infections. The evaluation of the current diagnostic and therapeutic methods is based on sober judgment and is supported by the results of personal experience. In spite of some inaccuracies and an occasionally clogged diction, the pamphlet is apt to serve as a reliable guide for the medical student. While the numerous illustrations may not come up to the highly artistic standard set by the larger textbooks, they certainly serve their purpose of elucidating the text.

A Practical Handbook of Water Supply. By Frank Dixey, O.B.E., D.Sc., F.G.S., Director of Geological Survey, Nyasaland. Cloth. Price, $8.50. Pp. 571, with 139 illustrations. New York: D. Van Nostrand Company, Inc.; London: Thomas Murby & Company, 1931.

Reclamation of arid agricultural land by irrigation is well known. In this book the author has attempted to deal with the problems of the British colonies in arid and semiarid regions, particularly in central and eastern Africa. It is intended for those who must provide or improve the water supply of settlements, both small and large. Various sources of water supply are discussed together with details of the construction of dams and certain geological features, such as the porosity and permeability of rocks. The quality of water supplies is described in considerable detail, particularly from the standpoint of mineral matter. Methods of purification are given briefly. The chapter on water finding methods is well done, particularly that part dealing with water divining. It is quite apparent that the author prefers geological and geophysical methods for locating supplies. The drilling and construction of wells is treated with much detail. The final chapter contains a description of water supply conditions in Africa. The book is interestingly written and well illustrated.

The Commoner Nervous Diseases for General Practitioners and Students. By Frederick J. Nattrass, M.D., F.R.C.P., Assistant Physician, Royal Victoria Infirmary, Newcastle-upon-Tyne. Cloth. Price, $4. Pp. 218, with 15 illustrations. New York: Oxford University Press, 1931.

The author has placed in a handy little volume his discussion of some of the more common diseases of the nervous system. These are of necessity briefly discussed, being mainly for the general practitioner. It hardly fills a place that has been needed in the literature, for there are many books which are more adequate than this.

Normale und pathologische Funktionen der Verdauungsorgane im Röntgenbild. Von Dr. Rudolf Becker, Röntgeninstitut des Theresienkrankenhauses, Mannheim, und Dr. Albert Oppenheimer, Röntgenabteilung der Med. Universitäts-Poliklinik, Frankfurt a. M. Paper. Price, 16.75 marks. Pp. 144, with 255 illustrations. Leipzig: Georg Thieme, 1931.

This study differs from the usual volume on the x-rays in that it lays stress on function rather than on anatomic change. The material has been gathered from ambulatory and hospitalized patients and has been controlled to a large extent by necropsies. The influence of constitutional types on the anatomy of the gastro-intestinal tract has also been noted. Five sections on the swallowing act, the stomach, the small intestine, the large intestine and the gallbladder comprise the book. In all sections function, both normal and pathologic, is outlined and the various disease syndromes are fitted in. This seems a much more satisfactory method than the standard one of describing each disease or malformation in succession. The sections on the swallowing act and the large intestine surpass the usual descriptions for this reason. The portion on the gallbladder deals with cholecystography. One could hardly find a better introduction to roentgenology of the gastro-intestinal tract. The printing is excellent, the illustrations are clear and abundant, and the references are many, although chiefly to German literature.

Wissenschaftliche Abhandlungen. Von Ewald Hering, weil. o. ö. Professor der Physiologie in Leipzig. Bände I und II. Herausgegeben von der Sächsischen Akademie der Wissenschaften zu Leipzig. Paper. Price, 57 marks, per set. Pp. 1850, with 176 illustrations. Leipzig: Georg Thieme, 1931.

Exclusive of several articles which appeared in various books of reference and addresses (collected and published in 1921) these volumes contain all of Hering's papers (1834-1918) on various physiologic and psychologic studies. The publisher, Mr. Hauff, together with benefactors and friends of the University of Leipzig, made it possible to reprint the life work of this gifted physiologist. By far the greater number of papers deal with the physiology of vision. Though the material is useful to psychologists and physiologists, the practicing physician will find little of value.

Medicolegal

Workmen's Compensation Acts: Dupuytren's Contracture Not a Compensable Injury.— For approximately twenty-five years, the claimant worked as a molder. His duties required the constant handling of a large crucible tong, spelter ing tong and mixing bar, and the lifting of fire pots and heavy objects. A callus developed on his right hand three or four years before 1928. It grew worse little by little, and his fingers came in gradually, without much pain. On Sept. 25, 1929, the claimant was admitted to the Boston City Hospital, where the condition of his hand was diagnosed as Dupuytren's contracture, and he submitted to an operation to relieve it. An award of compensation in his favor was made by the industrial accident board of Massachusetts and affirmed by the superior court, Middlesex County, and an appeal was taken to the Supreme Judicial Court. The claimant has not proved with reasonable certainty, said the Supreme Judicial Court, that the injury to his hand arose out of and in the course of his employment. There is no evidence of a physical lesion during the long course of the claimant's work, which produced a chronic inflammation of the palm of his hand. It takes from fifteen to twenty years to bring about a condition of the palm of the hand such as the claimant has, and it is consequently found only in men who are getting along in years. It is occasioned by any work continuing over a period of years that requires the grasping of any article which causes a continuous pressure on the palm of the hand. No disease is here traceable directly to a personal injury peculiar to the work of a molder. The condition of the claimant's hand marks the gradual breaking down of tissue as the result of many years of continuous labor. It is not the result of a personal injury within the meaning of the workmen's compensation act of Massachusetts. The decree of the superior court was therefore reversed.—*Reardon's Case (Mass.), 175 N. E. 149.*

Workmen's Compensation Acts: Death Due to Drinking Polluted Water an Accident.—The deceased workman died as a result of gastro-enteritis, "which developed into cardiac arthritis [sic]." His illness and death were attributed to drinking water furnished by his employer to him and other workmen, taken from the mouth of a tile ditch which carried the effluent from a septic tank and the surface run-off water from the territory which it served. The septic tank received the discharge from the toilets and other plumbing fixtures in the house of a nearby farmer. A sample of water taken, not from the tile ditch, but from a hole at the end of the tile, more than twenty days after the deceased workman last worked at this place, was shown by the state health board's examination to contain colon bacilli, and the chemist who examined the water testified that no surface water in Indiana had been found safe for drinking purposes without treatment. There was no competent evidence to show that the deceased workman drank any of the water furnished by his employer, but four other workmen became ill on the same day as did the deceased and in very much the same way, and there was no one food used by the group, nor did they live in the same locality. Under such circumstances death was an accident within the meaning of the workmen's compensation act of Indiana, and the industrial board, as triers of the facts, had a right to find that the polluted water caused the death of the claimant's husband.—*State v. Smith (Ind.), 175 N. E. 146.*

Physical Examinations: Right of Plaintiff to Object to Examiner.—The advance of the science of health and the dictates of fashion have, in the light of the gay nineties, all but bared the human body. Yet the general sentiment of mankind concerning the inviolability of the person, and the compelling of any one to lay bare his or her body or to submit it to the touch of a stranger without lawful authority, remains the same. There is, however, no reason to alter or modify the principles governing the matter. Nevertheless, many fancied fears of our judicial ancestors concerning the evils of compulsory physical examination have been swallowed up in the multiplication of negligence litigation and the necessary or unnecessary speed of trial work. Orders for the physical examination of plaintiffs by defendants, in personal injury actions, are stipulated or ordered in nearly every case. So voluminous have they become that in New York City the orders are initiated by the justice at special term, in order to save time, and even in Erie County they are often signed in dozen and half-dozen lots. Practically, physical examinations are no longer sought for any purpose save the preparation of expert medical testimony for use in trials. In the present case, the court would not have hesitated to appoint on its own initiative the medical examiner nominated by the defendant, had no suggestion to the contrary been made by counsel for either party. The plaintiff, however, while raising no objection to the private or professional standing, character or reputation of the medical examiner so nominated, takes the arbitrary position that he does not like that examiner and that therefore the court should not appoint him. The very nature of the examiner's task forbids that he or his selection be in any manner subject to the arbitrary dictation of the plaintiff, his counsel, or physician. The court should grant the motion of the defendant for an order authorizing a physical examination to be made by the examiner named by him, notwithstanding the arbitrary objection entered by the defendant.—*Black v. Bisgier (N. Y.), 248 N. Y. S. 555.*

Workmen's Compensation Acts: Refusal to Submit to Injection of Antitetanus Serum Not Unreasonable.—Payne, in the course of his employment, accidentally stepped on a nail, which penetrated the left foot. The wound was enlarged by his physician, iodine injected under pressure, a poultice applied, and the part bandaged. His physician advised him that antitetanus serum should be injected, so as to safeguard him against lockjaw, but Payne replied that he had run nails in his foot a good many times before and had never even had a physician. Tetanus developed and antitetanus serum was afterward administered, but death occurred two weeks after the injury. When Payne first applied for treatment he was not informed that the administration of antitetanus serum would cost him nothing, was painless, and was without any substantial danger to his life or health. Use of antitetanus serum in the community where the wound was treated was not common. Payne was not urged by his physician to submit to its use, and the physician did not regard his refusal to submit as unreasonable. On an appeal from the judgment of the circuit court affirming an award of the workmen's compensation commission, the appellant contended that Payne's refusal to submit to the injection of antitetanus serum was unreasonable and that therefore the judgment should be reversed, since the law provides that no compensation shall be payable for the death or disability of an employee, if and so far as it may be caused, continued or aggravated by an unreasonable refusal to submit to any medical or surgical treatment or operation, the risk of which is, in the opinion of the workmen's compensation commission, inconsiderable in view of the seriousness of the injury. The Kansas City Court of Appeals, Missouri, however, held to the contrary and affirmed the judgment.—*Payne v. Sullivan County (Mo.), 36 S. W. (2d) 127.*

Workmen's Compensation Acts: Medical Treatment to be Directed by Physician, Not by Employer.—The furnishing of medical attendance by an employer is for the benefit of the injured employee as well as of the employer. The selection of the physician and hospital by the employer is binding on the injured employee. The injured employee must submit to it or procure medical and hospital service at his own expense. The employer may procure another physician or hospital to perform the service, but he cannot control the actions of his physician or hospital any more than the injured employee can. Where an employer attempts to do so, he violates the rights of the injured employee. For such an injury the workmen's compensation act of Oklahoma provides no remedy, but the employer is liable in an action at law. An employer is not liable in an action at law for the result of the malpractice of the physician or the negligence of the hospital selected by him, but he is liable for any result that may accrue from his negligence in selecting such physician and hospital.—*Aetna Life Ins. Co. v. Watts (Okla.), 296 P. 977.*

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, February 15-16. Dr. William D. Cutter, Secretary, Council on Medical Education and Hospitals, 535 North Dearborn St., Chicago.

Mid-South Post-Graduate Medical Association, Memphis, Tenn., February 9-12. Dr. A. F. Cooper, Bank of Commerce Building, Memphis, Secretary.

Pacific Coast Surgical Association, Coronado, Calif., February 25-27. Dr. E. L. Gilcreest, 384 Post St., San Francisco, Secretary.

SOUTHERN SURGICAL ASSOCIATION

Forty-Fourth Annual Session, held at White Sulphur Springs, W. Va., Dec. 8-10, 1931

The President, DR. HUGH H. TROUT, Roanoke, Va., in the Chair

Surgery Versus Radiation in Benign Uterine Hemorrhage

DR. EDWARD H. OCHSNER, Chicago: This paper is a critical study of the advantages and disadvantages of surgery and radiation.

Certain Symbiotic Bacterial Infections Producing Gangrene, with Especial Reference to Treatment

DR. J. SHELTON HORSLEY, Richmond, Va.: In the last few years, attention has been called to symbiotic infections that produce some unusual types of inflammation. F. L. Meleney of New York has done much bacteriologic work on this infection. It may appear in various forms. One manifestation is a progressing necrotic ulceration of the abdominal wall following drainage of the abdomen after a ruptured appendix or after opening the lumen of the bowel. This type may occur elsewhere than in the abdominal wall; Probstein and Seelig reported a case following an operation on the mammary gland. I have observed a typical case of gangrenous ulcer of the abdominal wall following operation for a ruptured appendix. Another case, which might be termed a fulminant type of symbiotic infection, began at two small points on the inner portion of the left thigh. The infection spread rapidly and produced gangrene in the skin and in the subcutaneous tissues. There was no evidence of gas formation. The affected region was incised with the cautery, and much of the necrotic tissue was removed, the remainder being thoroughly cauterized. The patient gradually recovered. In two of these cases the affinity of the bacteria for the subcutaneous tissue and the skin was noticeable. In all three cases the nonhemolytic streptococcus and the staphylococcus were found, together with other types of bacteria. Incision with a knife should never be done in such cases; either the endotherm knife and the hot electric cautery, or the hot electric cautery alone, should be used. This condition appears to be ideal for an autogenous vaccine. The cautery seems useful, not only in removing the diseased tissue and in closing the lymphatics or blood vessels but in producing this autogenous vaccine.

Penetrating Wounds of the Abdomen Received from Pistol, Rifle and Shotgun Missiles: A Report of Sixty-Three Cases

DR. BYRD CHARLES WILLIS, Rocky Mount, N. C.: This paper is a study of sixty-three cases of perforations of the abdomen during the past seventeen years. Thirty-one of the patients were operated on within one hour; twelve were operated on after more than one hour had elapsed but within two hours; six between two and five hours after admission; two between six and ten hours, and one was allowed to remain in the hospital seven days so that the abscess might be walled off. Except in unusual injuries of the abdominal contents, the time elapsing between receipt of the injury and operation is probably the greatest single factor in the recovery of all patients whose injury is not so great as in itself to cause death, as is the case in so many shotgun wounds received at short range. The amount of hemorrhage and leakage of colon contents, with its secondary peritonitis, are the two great factors that are directly influenced by time. A direct hit of a large blood vessel will cause death rapidly. What can the physician do to influence hemorrhage? He can prescribe absolute rest, large doses of morphine, flat posture if the wound is in the upper portion of the abdomen, and moderate elevation of the upper part of the trunk if the wound is in the lower portion of the abdomen. The ideal method of treating hemorrhage is transfusion, either immediately before or during the operation; blood refusion can rarely be practiced, as there is usually an associated injury of some portion of the intestinal tract. Acacia is a good substitute and should be a part of the hospital armamentarium. Operating on shotgun wounds when small bird shot have scattered throughout the abdomen is hopeless, and it is useless to try to locate all the perforations. These patients should be put to bed with the head of the bed elevated at an angle of from 10 to 15 degrees. Nothing should be given by mouth. Treatment consists of the administration of sufficient morphine to keep the patient quiet, hypodermoclysis of a saline solution or an intravenous 5 per cent dextrose solution, with proper sterilization and dressing of the external abdominal wound. Tetanus and perfringens serums should be given and a watchful waiting policy followed. If these patients are operated on, the surgeon will scatter the infection through the holes in the intestine and general peritonitis and death will result.

Malignant Tumors of the Kidney in Childhood

DR. CHARLES G. MIXTER, Boston: My report includes observations on forty-one malignant renal tumors of infancy and childhood. The true renal neoplasms of early life probably all belong to the group of embryomatous mixed tumors. The onset and progress of this type of neoplastic disease is dangerously silent. The possibility of malignant disease, most frequently occurring in the kidney, should be borne in mind in any child with undue prominence of the abdomen, even if symptoms are absent and the general condition of the child appears good. Pyelography is rarely, and cystoscopy only occasionally, necessary in the preoperative investigation. The transperitoneal approach is the procedure of choice. The operative mortality from nephrectomy is decreasing and should be in the vicinity of 15 per cent at the present time. Freedom from recurrence may be expected in 18.2 per cent of the nephrectomized patients. The prognosis, though discouraging, is not hopeless, as one in ten of all patients coming to the surgeon may be expected to be alive and free from recurrence two years or more following operation.

Comparison of the Anatomic, the Clinically Normal and the Pathologic Stomach

DR. ADDISON G. BRENIZER, Charlotte, N. C.: Ulcers of the corpus, antrum and pylorus along the lesser curvature and duodenum are benign and frequently heal under medical treatment. The ulcers at the pyloric canal are mostly benefited by gastro-enterostomy or pyloroplasty. The dangers are perforation, hemorrhage and obstruction. Ulcers on the gastric side of the pyloric canal and outside the triangular area along the lesser curvature may or may not be malignant. The possibility of malignancy requires excision or gastrectomy. Excision for malignancy should be wide and extensive, and should therefore be extended into gastrectomy. The functioning of the stomach following gastrectomy is frequently far superior to that following gastro-enterostomy, both in the emptying time and in the reduction of acidity, and is superior in every way to that following V-shaped and "sleeve" resections. It is likely that none of these operations have primarily and finally more than a mechanical effect, beyond the removal of the growth, and that no enduring physiologic basis has been established beyond the drainage of the higher into the lower portion of the gastrointestinal tract. Reports are being made of patients with subtotal gastric resections and low acidities who are returning with new gastric and gastrojejunal ulcers. This principle of relieving stasis satisfies most of the surgical requirements and, when clearly indicated, yields satisfactory results in the large majority of cases. The surgeon's problem is centered on evacuation of the stomach and duodenum, regardless of the procedure employed for the removal of the lesion. In selected cases of duodenal ulcer and even gastric ulcer, in the gastroenteroptotic type of individual and with duodenal stasis, relief of tension and stasis can be attained directly, and at the same

time the normal motor function of the stomach and duodenum can be preserved by making the anastomosis between the duodenum and the jejunum rather than between the stomach and the jejunum.

The Syndrome of Rupture, Luxation and Elongation of the Long Head of the Biceps Brachii: An Analysis of Thirty Cases

DR. EDGAR L. GILCREEST, San Francisco: Careful study of the anatomic structure, the pathology, tears, complete ruptures, dislocations and elongations of the tendon of the long head of the biceps brachii will throw light on a definite clinical entity and lead to better diagnoses and more efficient treatment. In many vague conditions of the shoulder in which one of the aforementioned lesions is present, erroneous diagnosis is frequently made and treatment given for sprains, neuritis, bursitis and most often for arthritis, whereas, if proper early diagnosis is made and prompt surgical treatment given, great relief and frequently complete cure may be afforded.

Prevention and Treatment of Postoperative Ileus

DR. DONALD GUTHRIE, Sayre, Pa.: The surgeon can often tell just how smooth or how stormy the postoperative course of a given case may be by the amount of trauma necessary to employ at the time of the operation. All measures that promote gentle, intelligent, accurate, rapid work should be encouraged. An important part of the young surgeon's training should be to develop in his mind a sacred regard for the unconscious man's tissues. Every house surgeon should be given a retractor and taught how to handle it correctly. I have never allowed any form of self retaining retractor to be used in my clinic. Sharp dissection at all times should be carried out and rough gauze dissection discouraged. Administration of the anesthetic should be begun with the patient in the high Trendelenburg position. By the time the abdomen is opened, the pelvis will be practically free from all loose intestinal coils, so that it is often necessary to use the end of a square of gauze in the upper angle of the wound in order to obtain adequate exposure. One of the advantages of spinal anesthesia in the carefully chosen case is the complete relaxation of the abdominal wall and the collapsed state of the small intestine, permitting complete exposure with the use of the smallest amount of gauze. I have six patients on whom it has been necessary to employ multiple enterostomies in order to save them. I cannot agree with those who advocate entero-anastomosis between greatly distended and collapsed coils. This operation is contrary to all the principles that govern intestinal surgery. In operating originally in a case in which there is widespread early infection, I do not hesitate to perform a complemental enterostomy. In this way an obstruction duplex, should it develop, is controlled early. I also have several patients with widespread peritonitis who, I am sure, would have died without thorough drainage of the intestine. The simple operation of enterostomy has come into great favor and is a life-saving measure. The method, described lately by Holden, of evisceration of every patient who has obstruction, with direct emptying of all the distended coils, is dangerous, for many patients may be saved by less radical methods. The remarkable thing about enterostomy is the infrequency with which anything further is required. Rarely is one forced to reoperate and correct lesions causing the obstruction; they generally correct themselves.

Resection of Sigmoid with Cyst of Ileum After Carcinomatous Obstruction

DR. WILLIAM D. HAGGARD, Nashville, Tenn.: Mrs. E., aged 58, a widow, two and a half weeks before admission had acute abdominal pains with slight fever and general abdominal tenderness. Pelvic and rectal examinations gave negative results. In the left lower quadrant of the abdomen was a definite mass. Acute colic with vomiting and obstipation developed. The patient was admitted to the hospital, June 4, 1930; the following morning, cecostomy for partial obstruction due to carcinoma of the sigmoid was performed. There was a large mass in the lower sigmoid region. There were no nodules in the liver. A presenting coil of ileum showed a nodular, hard, red mass about the size of a bird egg, which looked as though it might be malignant. It was not removed. The head of the cecum was brought out through a right rectus incision, as if for a permanent colostomy. After the patient had been permitted to go home for a month, a roentgenogram showed a filling defect in the midportion of the sigmoid. A few days thereafter, the first stage of the Mikulicz operation was performed, and at the same time the excision of a small, bluish red tumor from the intestine, about 10 inches from the ileocecal valve, was made with a cautery knife. An enterostomy was done about the point of excision, which had been somewhat narrowed by suture. It was found that the growth was not malignant. It appeared to be a so-called enterogenous cyst of developmental type, sometimes spoken of as ileocecal cyst. The adenocarcinoma was exteriorized, and the tumor and excessive colon were removed with the cautery. The tumor proved to be a grade 3 carcinoma. The patient gained weight and was entirely well with the exception of a slight hernia at the cecostomy wound and her old ventral hernia. About one year afterward she had abdominal pain associated with nausea and vomiting. She had an incarcerated umbilical hernia, which was explored, but no intestine was found in the sac. Through a left rectus incision a small band was seen to be constricting a 12 inch loop of small intestine, which was greatly dilated above the band. It was divided between clamps, and an enterostomy in the distended small intestine was made. The umbilical hernia sac was closed without reduction of the incarcerated omentum. The patient made a good recovery and is well, now after a year and a half. It is unusual to have a patient survive intestinal obstruction, both of the large intestine by carcinoma and of the small intestine by band, and it is also disconcerting to find a very unusual and peculiar type of tumor on the small intestine in connection with but dissociated from carcinoma of the sigmoid structure.

An Appraisal of the Surgical Treatment of Pulmonary Tuberculosis

DR. HUGH H. TROUT, Roanoke, Va.: The problems of abdominal surgery which confronted the founders of the association and the present problems of thoracic surgery differ greatly. My own experience, together with visits to the clinics of the leading thoracic surgeons of the country and a survey of ninety-seven institutions for the treatment of tuberculosis, leads me to believe that the results of surgery of pulmonary tuberculosis justify the continuation of this work.

An Easy Operation for Removal of Cancer of Rectum in the Female

DR. LUCIUS E. BURCH, Nashville, Tenn.: The operation described has the following advantages: The function of the sphincter ani is retained and a permanent colostomy avoided. It provides abundant room and does not weaken the pelvic support. The superior hemorrhoidal vessels with the peritoneum open can be easily visualized and ligated. It permits the removal of the sacral glands and the division of the lateral ligaments and mesorectum when the intestine is being mobilized, and avoids injury to the ureters. It also permits thorough drainage of all parts of the wound. It is an operation that can be carried out by any surgeon who has had proper general and gynecologic training and experience. Spinal anesthesia was used in this case, and at that time I was enthusiastic about it. Experience and laboratory experiments have proved that it is a dangerous procedure and should be used only in selected cases and when other safer methods are contraindicated. My reason for this view is that during spinal anesthesia a vasoconstrictor paralysis occurs. Vasoconstriction is the natural compensating device which nature employs as a corrective for the diminished volume of blood following hemorrhage and for the low blood pressure subsequent to neurogenic or reflex shock. A mild hemorrhage may prove fatal if the patient is under spinal anesthesia.

Resections of the Common and Hepatic Bile Ducts and Ampulla of Vater

DR. WALTMAN WALTERS, Rochester, Minn.: Among the twenty-six cases of stricture and tumor of the common bile duct in which I operated at the Mayo Clinic, excellent results have been obtained in many cases in which accurate anastomosis has been made between the remaining portion of the duct and the duodenum or between the severed ends of the duct itself

and in which biliary fistulas have been transplanted into the stomach or duodenum. If such proceedures are to be successful, too much infection must not exist in the hepatic parenchyma, in the intrahepatic ducts or in the remainder of the extrahepatic duct above the stricture. Failure to obtain lasting good results may almost be predicted at the time of anastomosis if the liver has a marked cirrhotic appearance, if the stump of the duct is unduly thickened or if purulent bile or granular stones are present within the hepatic ducts. The ampulla of Vater and a portion of the duodenum of a patient whose only symptom was intestinal bleeding with anemia were successfully resected. This directs attention to the ease with which such tumors may be removed.

A Modification of the Devine Operation of Pyloric Exclusion for Duodenal Ulcer

DR. FREDERIC W. BANCROFT, New York: The modification of the Devine operation in a small series of consecutive cases (fourteen) has shown a low enough mortality and end-results satisfactory enough to warrant its use in postpyloric ulcers when the ulcers are adherent to the pancreas or in the neighborhood of the papilla of Vater. Its use is advocated in patients who have defied medical care and those in whom there is no marked gastric retention.

Primary Carcinoma of Liver: Resection

DR. REGINALD H. JACKSON, Madison, Wis.: A white woman, aged 80, whose chief complaint was a large spherical epigastric tumor, was subjected to exploratory laparotomy for a probable pancreatic cyst. Operation revealed a globular tumor mass occupying nearly the whole of the left lobe of the liver. No primary source of malignancy was present. The primary step in the operation was the ligation of the left hepatic artery and the left portal vein. Embryologic and phylogenetic development of the liver clearly indicate that there should be little or no cross circulation of blood or bile between the right and the left lobes of the liver. It would therefore seem expedient in certain cases of neoplasms of the left lobe to perform partial lobectomy in preference to local resection. The operation was made under spinal anesthesia. Convalescence was uneventful, and the patient is now, seventeen months later, enjoying excellent health.

Surgical Treatment of Tuberculosis of the Large Bowel

DRS. FRED W. RANKIN and S. GLEN MAJOR, Rochester, Minn.: In our sixty-five cases of hyperplastic tuberculosis of the intestine for which surgical measures were instituted, the symptoms most frequently encountered were pain and loss of weight. In fifty cases the mass was resected, and in the other fifteen cases a short-circuiting operation was performed. A study of the postoperative course of the two series of cases revealed that the results in the cases in which resection was done were definitely better than in those in which anastomosis alone was done.

A Study of Streptococcic Vaginocervicitis and Endocervicitis

DR. WALTER E. SISTRUNK, Dallas, Texas: In practically all women with clinical evidence of disease of the cervix, cultures of various types of streptococci and diplostreptococci could be obtained from the cervical canal. In 521 positive cultures taken from the cervix and the vagina and from cervical cysts, 80 per cent showed nonhemolytic gram-positive streptococci and diplostreptococci; 16 per cent, hemolytic gram-positive streptococci and diplostreptococci; 4 per cent, slightly hemolytic gram-positive streptococci and diplostreptococci, and 0.02 per cent, greenish gram-positive streptococci and diplostreptococci. My interest was stimulated by work done with Benedict of Rochester, Minn., years ago, in an effort to prevent blindness in patients suffering with serious inflammation of the eyes, by removal of the cervix or the entire uterus. Operations on these patients did prevent blindness, but mild recurrences occurred later in all the cases. Later, I removed the entire cervix in a patient who for two years had had attacks of pyelitis which recurred at intervals of about two months. This patient was examined one and a half years after operation, and during this time no attacks had occurred. The scope of the field was enlarged, and patients with neuritis, neuromuscular pains and arthritis were treated. To our surprise, most of these showed prompt improvement of symptoms. We first thought that the cervical infection per se was responsible for the symptoms but later found small erosions on the vaginal portion of the cervix, in the fornices of the vagina, on the lateral vaginal walls and on the remnants of the hymen and the mucous surface of the vaginal orifice. Most satisfactory results were obtained through cauterization of eroded surfaces and the application of 5 per cent aqueous solution of silver nitrate to the entire cervical canal, the vagina and the vaginal orifice. These treatments were made following sterilization of the vagina and a slow and careful complete dilation of the cervical canal with graduated uterine sounds. Such treatments were repeated several times at intervals of from four to six days. Autogenous vaccines used in the early cases treated did not appear to be of particular value.

Thrombopenic Purpura Hemorrhagica (Werlhof's Disease)

DRS. LON GROVE and MERRILL MUNDFORD, Atlanta, Ga.: The patient gave a history of repeated nosebleeds, because of which he was discharged from the army. There was, however, no unusual bleeding following a submucous resection, and his convalescence was entirely uneventful. The true condition was not suspected until after a subsequent operation for hemorrhoids. A chest complication developed following both anesthetics, first in the right and then in the left lung. Type I pneumococcus was recovered from the sputum, and the patient responded well to pneumococcic serum. Following the first attack a peculiar condition persisted, characterized by chronic dyspnea, suggestive of chronic asthma associated with expectoration of large amounts of blood-streaked sputum, which did not clear up until splenectomy was done, while following splenectomy there were no residual symptoms after the acute condition subsided. This leads one to believe that the purpura must have had some direct bearing on the chest complications, as has been suggested by other writers.

Cancer and Irritative Lesions of the Cervix Uteri

DR. FRANK C. BEALL, Fort Worth, Texas: Cancer of the cervix is a preventable disease. Certainly it is a curable one. The great problem is to get the patient under observation at the proper time. It is not enough to tell a woman to report to her physician when she has any irregular bleeding from the vagina. Contrary to what is generally taught, there are no early symptoms of cancer of the cervix, nor are there any symptoms of precancerous lesions, except perhaps leukorrhea, and this is by no means constant. The early detection of cancer of the cervix and of precancerous lesions must depend on the periodic pelvic examination of women who have borne children. The physician should feel that it is his duty first to inform himself and then to pass the information on to the patients with whom he comes in contact as to how they can best protect themselves from cancer. Women should be taught that childbirth makes them liable to cancer of the cervix, that they should submit periodically to pelvic examination, and that all irritative lesions about the genital tract should receive prompt attention. These facts should, in particular, be impressed on the obstetricians of the country, for it is they who have the best opportunities for giving this information to the mothers.

Acute Conditions of the Abdomen

DR. R. A. WOOLSEY, St. Louis: The early recognition of an acute condition of the abdomen is most important if the best results are to be accomplished. The public should be taught that the administering of purgatives in the presence of abdominal pain is fraught with grave danger. Physicians must be taught to withhold opiates until after positive diagnosis is made; also that the element of time in peritonitis must not be considered as trustworthy a guide to safety as the rapidity of progress, and that the physical condition of the patient is no guide to his resistance. The operation should be completed with the greatest expedition consistent with thoroughness. Incomplete operation fails of its purpose in removing and repairing the focus, while intrusive operation augments the spread of infection.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

26: 681-786 (Nov.) 1931

*Roentgenologic Study of Intrathoracic Lymphoblastoma. B. R. Kirklin, Rochester, Minn., and H. W. Hefke, Milwaukee.—p. 681.
*Roentgenologic Studies in Early Lobar Pneumonia. W. H. Ude, Minneapolis.—p. 691.
*Peptic Ulcer of Esophagus. J. R. Aurelius, St. Paul.—p. 696.
Roentgen-Anatomic Studies of Colon in 600 Patients with Pulmonary Tuberculosis. H. L. Sampson, Trudeau, N. Y., and Béla Halpert, New Haven, Conn.—p. 704.
Cleidocranial Dysostosis: Case. R. N. Klemmer, P. O. Snoke and H. K. Cooper, Lancaster, Pa.—p. 710.
Roentgen-Ray Treatment of Experimental Tuberculosis. J. W. Spies, New Haven, Conn.—p. 716.
How We Can Meet the Cancer Problem. H. J. Ullmann, Santa Barbara, Calif.—p. 726.
*Clinical Evaluation of Various Qualities of Roentgen and Radium Rays for Treatment of Advanced Cancer. B. P. Widmann, Philadelphia. —p. 729.
Carcinoma of Cervix: Technic of Treatment. W. P. Healy, New York. —p. 734.
Radium as Adjunct to Surgery in Treatment of Carcinoma of Fundus of Uterus. H. H. Bowing and R. E. Fricke, Rochester, Minn.—p. 738.
*Radiation Therapy of Cancer of Cervix at Bellevue Hospital. Ira I. Kaplan, New York.—p. 746.
Tumor-Inhibiting Substance in Rous Chicken Sarcoma. M. J. Sittenfield, New York.—p. 750.
A Pioneer Roentgenologist: Eugene Rollin Corson, M.D., Savannah, Georgia. E. H. Skinner, Kansas City, Mo.—p. 759.

Roentgenologic Study of Intrathoracic Lymphoblastoma.—According to Kirklin and Hefke, roentgenologic examination of the thorax in cases of Hodgkin's disease, lymphosarcoma and leukemia does not permit a precise diagnosis of any one of these diseases. They must be considered as one group, which might be called either lymphoblastoma or malignant lymphoma. Demonstrable roentgenologic manifestations in the thorax may be expected in about 50 per cent of the cases of Hodgkin's disease and in about 20 per cent of the cases of lymphosarcoma and of leukemia. In a series reported by the authors, enlargement of the mediastinal and hilar nodes was the most common manifestation. Involvement of the lungs, either of the infiltrative or of the metastatic type, was found in 30 per cent of the cases of Hodgkin's disease, in about 23 per cent of the cases of lymphosarcoma and in 40 per cent of the cases of leukemia, whenever involvement of the thorax was demonstrable.

Roentgenologic Studies in Early Lobar Pneumonia.—Ude analyzes the roentgenologic observations in early lobar pneumonia and correlates them with the pathologic studies of Blake and Cecil. Lateral as well as anteroposterior views, at the bedside, are advocated to demonstrate consolidations which may be overshadowed by the heart and diaphragm. Lateral roentgenograms of so-called "hilus" or "central" pneumonia indicate that this term is a misnomer, that these medial shadows are in reality posterior cone-shaped consolidations, and that they may best be defined as early posteriomedial consolidations.

Peptic Ulcer of Esophagus.—Aurelius states that peptic ulcer of the esophagus is a definite disease of frequent enough occurrence to be of real interest and importance. It has as its cardinal symptoms pain, dysphagia, nausea and vomiting, and occasionally hemorrhage and perforation. Its diagnosis calls for the closest cooperation between the clinician, the roentgenologist and the esophagoscopist. It has been infrequently diagnosed clinically in the past, but, with development of the facilities for the roentgen examination and esophagoscopy, and if sought for in cases with substernal or epigastric pain, its incidence will be considerably higher than found heretofore. The diagnostic criteria are yet incomplete and the roentgenologist has an important duty to perform in their further development.

Treatment of Advanced Cancer.—Widmann obtained equally good clinical results with long and short wavelength roentgen and radium rays in a series of epitheliomas of the lip. The skin tolerance is greater for short wavelength radiations; there is more penetration but apparently less absorption. The skin tolerance increased when different short wavelength radiations were combined (roentgen rays: 200 kilovolts and 0.5 mm. of copper; radium: filters of lead with densities equal to 2 mm. of platinum). Radium packs with filtrations of lead and silver (3 mm. of lead and 0.5 mm. of silver, approximately equal to the density of 2 mm. of platinum) were employed for economical reasons, and represent densities approximately 2.5 times the usual 2 mm. of brass. The qualities of these radiations cannot be accurately interpreted with the present physical equipment. The technic described by the author incorporates the principle of Regaud (weak intensities for a long period of time). These combined qualities of radiation admit total intensities of from 230 to 280 per cent skin erythema dose through a given skin area by protracting treatment over a period of from four to six weeks. Improved clinical results justify the recommendation of combined short wavelength irradiation for advanced cancer.

Radiation Therapy of Cancer of Cervix.—Kaplan believes that carcinoma of the cervix is best treated by irradiation. At Bellevue Hospital, irradiation has replaced operation for this condition. The method employed is a modification of that first established by Regaud. Treatment is by roentgen rays and radium. Complications are treated in the normal gynecologic manner for pelvic infections.

American Journal of Surgery, New York

14: 385-590 (Nov.) 1931

*Abdominal Pain: Paths Over Which It Travels and Ways in Which These May Be Blocked. W. C. Alvarez, Rochester, Minn.—p. 385.
*Injured Abdomen: Consideration of Visceral Injuries Due to Trauma Where Abdominal Wall Has Not Been Perforated. H. Robertson, Sayre, Pa.—p. 395.
*Roentgenographic Measurement of Pelvic and Cephalic Diameters. J. Jarcho, New York.—p. 419.
Puerperal Inversion of Uterus: Gangrenous Uterus, Abdominal Panhysterectomy, Recovery. L. E. Phaneuf, Boston.—p. 428.
Is Blood Flow in Varicose Veins Reversed? Radiographic and Clinical Observations. A. A. Schmier, Brooklyn.—p. 431.
Hospital Care of Upper Extremity Fractures. W. G. Doran, New York. —p. 442.
Cervical Ribs. C. U. Collins, Peoria, Ill.—p. 449.
Apparatus to Reduce Shoulder Dislocations. F. D. la Rochelle, Springfield, Mass.—p. 452.
*Carbon Dioxide as Adjunct to Spinal Anesthesia. C. A. Roeder, Omaha. —p. 454.
Rupture of Uterus Following Cesarean Section. F. A. van Buren, San Antonio, Texas.—p. 458.
Gas Bacillus Infection in Civil Life. W. E. King, Detroit.—p. 460.
Treatment of Extensive Granulating Areas, with Especial Reference to Use of Physical Therapy Measures. E. B. Potter and W. S. Peck, Ann Arbor, Mich.—p. 472.
Rupture of Bladder Through Hunner Ulcer-Bearing Area. J. S. Eisenstaedt and T. G. McDougall, Chicago.—p. 477.
Prevention of Infections in Prostatectomy: Report on Use of Mercurochrome. A. Harris, Brooklyn.—p. 480.
Plastic Surgery and Specialists. J. W. Maliniak, New York.—p. 483.
Injection Treatment of Hemorrhoids. F. C. Yeomans, New York.—p. 489.
Cartilage Implant. H. L. Updegraff, Hollywood.—p. 492.

Abdominal Pain.—Alvarez believes that there are many patients with severe, as yet unexplainable, abdominal pain who might perhaps be relieved by some form of nerve blocking. He presents a brief summary of what is known about the ways in which such blocking might be done. The pathways of sensory fibers leaving the abdomen are outlined. Most of these fibers leave by way of the splanchnic nerves. The technic of cutting the various nerves or of blocking them with procaine hydrochloride and alcohol is briefly described, and the results of such operations on animals and man are reported. Many difficulties remain to be overcome and much needs to be learned about the possibilities, limitations and disadvantages of nerve sectioning. Great care will have to be exercised in choosing patients for study or operation, and good sense and conservatism will later

have to enter into the judgments made as to the results of the treatment.

Injured Abdomen.—Robertson summarizes his experience with nonpenetrating wounds of the abdomen as follows: 1. Conservatism has proved to be the best policy. If one is to err in his handling of an intra-abdominal injury, it is safer in a group of cases to err on the side of doing too little. 2. No one can be dogmatic concerning the treatment of these injuries. Each case presents a different problem and should be dealt with accordingly. Some patients should be operated on immediately; others should never be subjected to operation. 3. Differential diagnosis is difficult and often impossible. A clear conception of the modus operandi of the injury and the force involved will make the diagnosis much easier. 4. At the Guthrie Clinic and the Robert Packer Hospital, only those patients showing evidence of uncontrolled hemorrhage or of peritonitis are operated on. 5. Any trauma involving the abdomen calls for critical study and bears careful watching for a prolonged period of time.

Pelvic Measurement.—According to Jarcho, clinical methods of determining the diameters of the maternal pelvis and fetal head, while of practical value as approximate measurements, leave much to be desired from the standpoint of accuracy. By means of roentgenographic pelvimetry, the size of the passages and the passenger may be determined with great precision. In difficult cases these exact measurements may be of much importance. The author describes various methods by which they may be obtained roentgenographically.

Spinal Anesthesia.—Roeder states that spinal anesthesia produces respiratory failure in two ways: a paralysis of the motor nerves of respiration, and a paralysis of the vasomotor nerves of the splanchnic area which results in a loss of blood pressure followed by a myocardial and medullary ischemia. Carbon dioxide, from 5 to 10 per cent in pure oxygen, is a valuable adjunct in spinal anesthesia when the motor nerves of respiration are not paralyzed. It assists in maintaining blood pressure in most instances and in maintaining the circulation of the blood when the heart contraction ceases from myocardial ischemia due to an acute decrease in blood pressure. If a paralysis of the motor nerves of respiration occurs, only artificial respiration can be of service, followed secondarily by vasoconstrictor stimulation. If a paralysis of the splanchnic vasomotor nerves occurs primarily, vasomotor tonics are indicated to relieve the myocardial and medullary ischemia. The armamentarium of the spinal anesthetist should consist of an apparatus for artificially insufflating the lungs with oxygen and carbon dioxide and a vasoconstrictor such as epinephrine. The complications of spinal anesthesia are too great for the surgeon to care for during the operation. They require a special anesthetist who has a knowledge of the causes of respiratory and vascular collapse and who has the means and methods of handling them successfully. In place of doing away with an anesthetist, spinal anesthesia requires one of greater training, because of the greater frequency of serious complications. The spinal anesthetist must keep constantly in mind that respiratory collapse may be of central or of peripheral origin; e. g., a functionless medulla oblongata from ischemia or a block of the motor nerves of thoracic respiration. He must also keep constantly in mind that a sudden vascular collapse or decrease in blood pressure may be of central or of peripheral origin.

American Journal of Tropical Medicine, Baltimore

11: 365-512 (Nov.) 1931

*Yellow Fever Accidentally Contracted in Laboratory: Seven Cases. G. P. Berry and S. F. Kitchen, New York.—p. 365.

Histoplasmosis (Darling) Without Splenomegaly. R. M. Crumrine and J. F. Kessel, Los Angeles.—p. 435.

Duration of Passive Immunity in Yellow Fever. J. H. Bauer, Lagos, Nigeria.—p. 451.

Winter Breeding and Activity of Culicine Mosquitoes at New Orleans (30° N. Lat.). E. H. Hinman, New Orleans.—p. 459.

Amebiasis: Clinical Study. W. E. Musgrave, San Francisco. Edited by A. C. Reed.—p. 469.

Yellow Fever Contracted in Laboratory.—Berry and Kitchen present the results of studies made in seven cases of yellow fever acquired in the laboratory. The group embraced infections ranging from very mild to moderately severe. All the patients recovered. Details of the clinical courses are provided because the infections furnish examples of typical mild yellow fever, the form of the disease rarely recognized yet paramount in importance from the standpoint of epidemiology and public health. In the mode of onset the light attacks corresponded with classic descriptions. Yet of the signs of the disease commonly recognized as cardinal, i. e., paradoxical pulse-temperature relationship, jaundice, albuminuria and "black vomit," only the first was regularly observed, while the others were absent, or present in minimal form. It was shown that bradycardia occurred independently of jaundice. Additional evidence of myocardial injury was brought out by bedside observations, by roentgen measurements of acute dilatation of the heart and by electrocardiograms. By the last method of examition, furthermore, abnormalities similar to those reported in the experimental disease in monkeys were shown to occur in the patients. The demonstration of guanidine increase in the blood of one of the mildly infected patients links yellow fever to other diseases also characterized by extensive liver destruction. Convalescent human serum in amounts of 5 cc. at bimonthly intervals was ineffective in preventing laboratory infection. A systematic study of the leukocytic reaction was conducted in five of the cases. Following the onset of disease, a progressive leukopenia due chiefly to a decrease in neutrophils developed. The cell count attained its lowest point on the fifth or sixth day. At this time, the lymphopenia present at the initiation of symptoms was already disappearing. The monocyte count, unaltered during the period of acute illness, rose during convalescence. The most striking leukopenia occurred in two of the milder cases. The reaction of the leukocytes in each case showed sufficient constancy to suggest that it may be an important diagnostic aid. The diagnosis was established by the successful transfer of the virus to monkeys and to mice and by the demonstration of protecting antibodies in each patient's blood. It was shown that virus existed in the blood of one patient as late as the fifth day (107 hours after the onset) of disease, and neutralizing antibodies were demonstrated in the same case as early as the fourth day (83 hours). Thus the simultaneous presence of virus and of antibody in human blood in yellow fever was established.

Archives of Otolaryngology, Chicago

14: 551-698 (Nov.) 1931

*Significance of Edema Due to Mastoiditis. N. Asherson, London, England.—p. 551.

Absorption from Mucosa of Frontal Sinus. J. H. Childrey and H. E. Essex, Rochester, Minn.—p. 564.

*Multiple Papillomas of Esophagus: Case. L. Ginsburg, Toledo, Ohio.—p. 570.

Function of Tensor Tympani Muscle. S. J. Crowe, W. Hughson and E. G. Witting, Baltimore.—p. 575.

Intra-Antral Air Pressure Incident to Respiratory Excursion and Its Effect on Antral Drainage. J. McMurray, Washington, Pa.—p. 581.

"Reticulo-Endothelial" Components of Accessory Sinus Mucosa: Experimental and Clinical Observations. R. A. Fenton and O. Larsell, Portland, Ore.—p. 586.

*Tumors of Tonsil and Pharynx (357 Cases): I. Benign Tumors (Sixty-Three Cases). G. B. New and J. H. Childrey, Rochester, Minn.—p. 596.

Cerebrospinal Rhinorrhea with Cyst of Pituitary Body: Treatment and Apparent Cure: Case. C. Smith and L. Walter, Spokane, Wash.—p. 610.

Edema Due to Mastoiditis.—Asherson discusses sagging of the posterior osseous meatal wall in mastoiditis and its significance. The sagging may be slight or so marked as to fill the meatal lumen completely and prevent any view of the tympanic membrane. There may be little or no otorrhea, or the latter may be so profuse that the tumefaction becomes evident only when the meatus is thoroughly cleaned. In view of its cryptic position the sagging is liable to be overlooked or, at any rate, detected much later than a similar swelling over the lateral surface of the mastoid. Hence it must be sought by otoscopy. It may be produced in a sclerotic process or by infection of the periantral cells in a cancellous bone. The sign is therefore of much import. It is one of the most reliable indications of acute mastoiditis. In any case of suspected mastoiditis, the detection of this sagging renders the diagnosis positive. It may be present for a long time, and yet all other signs or symptoms of acute mastoiditis may be absent or slight. Hence it becomes a matter of diagnostic value to search for this sign in arriving at a diagnosis of acute conditions of the

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ear. It is found as a matter of clinical observation that in a large majority of cases in which the sign is detected the mastoiditis is associated with a further complication, such as perisinous abscess or extradural abscess. Hence the sign carries added significance as to the urgency of operation in the cases in which it is present. The sagging may be superficially simulated by other conditions. In influenzal otitis the outer layer of the tympanic membrane, which is in continuity with the integument over the posterior wall of the osseous meatus, may be distended with blood to form a bulla, which may extend on to the meatal wall and simulate the sagging. If one is in doubt, puncturing the bulla will settle this point. Sometimes the bulla may assume a polypoid form, with very thick walls, and be mistaken for a polypus, but here again puncture reveals its content to be blood. An inflamed distended tympanic membrane may appear to be sagging, and the author has observed an exostosis, over which the skin was inflamed, simulate sagging. Edema may also occur at a site distant from the inflammatory nidus, like any local edema. Thus edema of the lower eyelid may occur on the same side as the aural condition. This physical sign is consistently detectable in children in association with zygomatic mastoiditis; i. e., the infective mastoid focus ruptures externally over the cells in the root of the zygoma. In practice, whenever pus ruptures externally under the tense temporal fascia as a result of mastoiditis, this sign is observed and clears up as soon as the exudate perforates the fascia (thus relieving the tension) or after operative intervention, which produces the same effect. The cause for this may be compression of the veins returning from the outer canthus of the eyelid, running deep to the temporal fascia, or obstruction of the venous return from the scalp to the anterior auricular region by the mastoid swelling. This diverts a larger venous return to the orbit. The veins there are valveless, and the lax, unsupported tissues of the orbit readily distend to produce edema of the lower eyelid. This is a manifestation of a collateral circulation.

Papillomas of Esophagus.—Ginsburg reports a case of extensive multiple papillomas of the esophagus which demonstrates the fact that esophageal papillomas may be confused with cancer of the gullet when the condition occurs in elderly people. The case emphasizes the importance of using the esophagoscope in making a definite diagnosis of esophageal lesions.

Tumors of Tonsil and Pharynx.—New and Childrey made a clinical and pathologic study of sixty-three cases of benign tumors of the pharynx and tonsil observed in the Mayo Clinic from 1917 to 1930, inclusive. Benign tumors of the pharynx and tonsil may be papillomas, adenomas, lipomas, fibromas, myxomas, varices, angiomas, chondromas, osteomas, polypi, teratomas, cysts and lymphoid tissue tumors. Certain observers group mixed tumors with benign growths. The authors believe that adenocarcinoma of the mixed tumor type is of a low grade of malignancy, and did not include such tumors in their series of benign tumors. The series includes practically all the other types of benign neoplasms. Thirty-five (55.5 per cent) of the sixty-three cases were papillomas, whereas the remainder formed small groups, usually of from one to five cases, of other types. The neoplasm rarely produces dangerous symptoms. Since one can never be sure of the benign nature of these lesions, in order to prevent annoying symptoms incident to their increase in size all lesions should be treated. Treatment is largely surgical. Pedunculated growths, such as papilloma, fibroma, adenoma, dermoid and lipoma, are removed by clipping off the tumor and destroying the pedicle with the cautery or diathermy. Encapsulated, sessile growths, such as lipoma, fibroma and adenoma, may be removed with the capsule intact. If they are too large to be removed through the mouth, an external operation may be performed. The tumor is approached through an incision paralleling the anterior border of the sternocleidomastoid. Retention cysts are removed with the tonsil, which is usually infected, or they may be incised and the lining destroyed by diathermy. Angiomas of children are treated with radium needles, tubes on an applicator, or emanation seeds; those of older persons are destroyed by the protected diathermy point. The prognosis in all cases depends on complete removal and is usually good.

Archives of Pathology, Chicago

12: 689-867 (Nov.) 1931

*Infection of Rabbits with Tubercle Bacillus by Way of Trachea: Studies on Defensive and Metabolic Apparatus of Lungs. B. M. Fried, Boston.—p. 689.

*Sites of Decalcification and Bone Lesions in Experimental Hyperparathyroidism. H. L. Jaffe, A. Bodansky and J. E. Blair, New York.—p. 715.

*Effects of Intrathecal Administration of Mercurochrome-220 Soluble and Metaphen. A. Levinson and M. A. Perlstein, Chicago.—p. 729.

*Congenital Atresia of Esophagus with Tracheo-Esophageal Fistula: Eight Cases. A. H. Rosenthal, New York.—p. 756.

*Reticulosis. M. A. Goldzieher and O. S. Hornick, Brooklyn.—p. 773.

Grading of Carcinoma of Cervix Uteri as Checked at Autopsy. S. Warren, Boston.—p. 783.

Experimental Pathology of Liver: Studies III, IV, V. F. C. Mann, F. C. Fishback, J. G. Gay and G. F. Green, Rochester, Minn.—p. 787.

*Effect of Homologous Macerated Skin on Regeneration of Epidermis. F. A. McJunkin and T. Matsui, Chicago.—p. 794.

Route of Tuberculous Infection.—Fried reports that infection of rabbits with the bovine type of tubercle bacilli by way of the trachea provokes an instantaneous reaction in the lungs. The early lesion, that is, the "primitive tubercle," is found in the lung within five minutes after the aerogenous infection. The lesion is intra-alveolar, being a "parenchymatous alveolitis." The cells that primarily respond to the acid-fast bacilli are those commonly designated as "respiratory epithelium." Under the influence of the tubercle bacillus, these cells undergo instantaneous morphologic changes, proliferate, separate from the wall of the air sacs, phagocytose the acid-fast bacillus and form typical miliary tubercles. They also form giant cells of the Langhans type. Rabbits infected with bovine tubercle bacilli by way of the trachea survive from three to four times longer than those infected with the same amount of bacilli by way of the blood stream. In many of the aerogenously infected animals the acid-fast bacilli remain apparently "immured for life" in the lungs, for no lesions or bacilli are detected in organs outside the pulmonary tissues. The pulmonary reaction to the "virtual" infection with the tubercle bacillus is akin to that of the "model infections" with vital dyes and oils reported previously.

Experimental Hyperparathyroidism.—From a study of the bones of guinea-pigs with experimental hyperparathyroidism, Jaffe and his associates conclude that the rate of decalcification of the bony skeleton at any site is related to the rate of bone growth and metabolic exchange at that site. Decalcification and reactive lesions are more prominent in experimental hyperparathyroidism in regions of normally active growth of bone and less prominent in regions of less active growth. In the latter, simple thinning of the bone is sometimes the only change observed. This conception makes intelligible the greater susceptibility of young animals to parathyroid extract, and the reported details of the changes in the different bones and in the various portions of certain bones in experimental hyperparathyroidism.

Antiseptics Intrathecally.—Levinson and Perlstein state that subthecal punctures and injections in the dog are attended by difficulties and frequently by injuries to the animal. With the proper technic, however, these may usually be circumvented. The maximum subtoxic dose of mercurochrome-220 soluble by intracisternal injection was between 0.07 and 0.11 mg. per kilogram; the minimum lethal dose was between 0.11 and 0.15 mg. per kilogram. By intraspinal injection, the toxicity was less, the maximum subtoxic dose being between 0.17 and 0.22 mg. per kilogram. The maximum subtoxic dose of metaphen by intracisternal injection was between 0.10 and 0.12 mg. per kilogram; the minimum lethal dose was between 0.16 and 0.18 mg. per kilogram. By intraspinal injection the toxicity was less, the maximum subtoxic dose being between 0.14 and 0.22 mg. per kilogram. Lavage from the cistern to the lumbar region with a 1:1,000 solution of mercurochrome was fatal to dogs, but lavage with a 1:25,000 solution of metaphen was well borne. Mercurochrome was bactericidal in dilutions up to 1:1,000 under the same conditions in which metaphen was bactericidal in dilutions up to 1:50,000. After the intrathecal injection of either mercurochrome or metaphen, the following changes occurred in the cerebrospinal fluid: (*a*) increased pressure; (*b*) increased number of cells, first of erythrocytes and later of polymorphonuclear leukocytes and lymphocytes, the

former predominating; (c) increased protein content, mainly due to albumin, to such an extent that the fluid coagulated on standing. An aseptic serofibrinopurulent leptomeningitis followed the intrathecal injection of either mercurochrome or metaphen. The authors believe that mercurochrome should not be administered intrathecally clinically, because sublethal doses are not bactericidal. Metaphen deserves further investigation as an intrathecal disinfectant, for not only does it have a larger margin of safety than mercurochrome but it is bactericidal in sublethal doses.

Atresia of Esophagus.—Rosenthal describes the gross structure of eight and the microscopic structure of four cases of congenital atresia of the esophagus and reviews the literature on this malformation. Reports on the histologic structure of the anomaly are infrequent. Microscopic examination in the cases presented revealed tracheal structures in the fistulous end of the lower segment of the esophagus. Although the gross structure of the anomaly is markedly constant, the microscopic structure, according to the histologic reports, presents marked variations. The development of the anomaly seems to rest on an early fundamental change in the entodermal cells that are to give rise to the esophagus, and not on primary concomitant abnormalities. This change may be genetic and related to the anterior end of the neurenteric canal.

Reticulosis.—Goldzieher and Hornick report a case of generalized proliferation of the reticulo-endothelial cells, with involvement of the bones, spleen, liver and lymph nodes. Another case is described in which a comparable lesion developed from the reticulum cells of the lymph nodes. The relationship of both cases to others previously reported is discussed. The name reticulosis is suggested for this process, which may or may not associate itself with leukemia. Reticulosis cannot be always sharply demarcated from neoplastic conditions, and a number of cases remain on the borderline between reticulosis and reticulum cell sarcoma. Instances of the latter, which localizes in one place (lymph node or tonsil) have been previously classified as lymphosarcoma, Hodgkin's sarcoma, or endothelioma of lymph nodes.

Regeneration of Epidermis.—McJunkin and Matsui performed experiments to determine the effect of macerated dead tissue on the regeneration of living cells of like kind maintained in contact with their normal blood supply. They found that dead macerated epidermis, both adult and fetal, promotes the proliferation of the epidermal cells. The stimulant action is local, since control wounds only 2 cm. distant do not show it. That the increase in growth is not mechanical and due to a protective influence of an inert substance is shown by its absence in the wounds filled with a paraffin-petrolatum mixture. The evidence is that from the macerated epidermis undergoing local disintegration there is liberated a formative stimulus which, so far as one may judge from the author's experiments, is specific for the epidermal cells. The soft macerated epidermis physically offers little resistance to the extension of cells into it, and yet the epidermis extends beneath it. This behavior is seen also in the wounds filled with paraffin-petrolatum and, no doubt, is brought about by the concentration of nutrition in this situation. Although the macerated epidermis stimulates epidermal regeneration, it appears not to afford complete nutriment to the proliferation of epidermoid cells. Failure of other macerated tissues to act similarly is suggestive of the presence in the epidermis of a growth-promoting substance specific for the epidermoid cell.

Indiana State Medical Society Journal, Fort Wayne

24: 589-648 (Nov. 15) 1931

A Few Problems of the Modern Doctor. E. H. Cary, Dallas, Texas. —p. 589.
Early Prostatectomy. E. O. Nay, Terre Haute.—p. 593.
Present Status of Radium in Treatment of Uterine Hemorrhage. W. H. Kennedy, Indianapolis.—p. 597.
Organized Medicine and Public Health Agencies. F. S. Crockett, Lafayette.—p. 602.
Cancer of Sigmoid: Case. H. H. Wheeler, Indianapolis.—p. 605.
Combined Simultaneous Arsenobenzene Bismuth Therapy: Report of 102 Patients with Early and Late Syphilis. T. D. Rhodes, Indianapolis. —p. 606.
Breast Tumors: Observations on Diagnosis, Surgical Pathology and Treatment. H. D. Caylor, Bluffton.—p. 610.
Abdominal Manifestations of Chest Diseases. B. L. Harrison, Newcastle. —p. 614.

Journal of Biological Chemistry, Baltimore

94: 1-328 (Nov.) 1931. Partial Index

*Source of Excess Calcium in Hypercalcemia Induced by Irradiated Ergosterol. A. F. Hess, H. R. Benjamin and J. Gross, New York.—p. 1.
*Investigation of Comparative Ash Content of Metaphyses and Shafts of Bones. A. F. Hess, Frieda S. Berliner and Mildred Weinstock, New York.—p. 9.
Antiurease. J. S. Kirk and J. B. Summer, Ithaca, N. Y.—p. 21.
Influence of Feeding Proteins, Amino-Acids and Related Substances on Creatine-Creatinine Metabolism. H. H. Beard and B. O. Barnes, Cleveland.—p. 49.
Studies in Nutritional Anemia of Rat: I. Influence of Iron on Blood Regeneration. H. H. Beard and V. C. Myers, Cleveland.—p. 71.
Id.: II. Influence of Iron Plus Supplements of Other Inorganic Elements on Blood Regeneration. V. C. Myers and H. H. Beard, Cleveland.—p. 89.
*Id.: III. Prevention of Anemia by Means of Inorganic Elements. H. H. Beard, Catherine Rafferty and V. C. Myers, Cleveland.—p. 111.
Id.: IV. Production of Hemoglobinemia and Polycythemia in Normal Animals by Means of Inorganic Elements. V. C. Myers, H. H. Beard and B. O. Barnes, Cleveland.—p. 117.
Id.: V. Action of Iron and Iron Supplemented with Other Elements on Daily Reticulocyte, Erythrocyte and Hemoglobin Response. H. H. Beard, R. W. Baker and V. C. Myers, Cleveland.—p. 123.
Id.: VI. Effect of Inorganic Elements on Rate of Blood Regeneration and Growth. H. H. Beard, Cleveland.—p. 135.
*Feeding Experiments with Mixtures of Highly Purified Amino-Acids: I. Inadequacy of Diets Containing Nineteen Amino-Acids. W. C. Rose, Urbana, Ill.—p. 155.
Id.: II. Supplementing Effect of Proteins. Ruth H. Ellis and W. C. Rose, Urbana, Ill.—p. 167.
Id.: III. Supplementing Effect of Casein Fractions. W. Windus, Florence L. Catherwood and W. C. Rose, Urbana, Ill.—p. 173.
Carotenase: Transformation of Carotene to Vitamin A in Vitro. H. S. Olcott and D. C. McCann, Iowa City.—p. 185.
Studies on Chemical Composition of Human Skeleton: I. Calcification of Tibia of Normal New-Born Infant. Lela E. Booher and G. H. Hansmann, Iowa City.—p. 195.
Studies on Antineuritic Vitamin: I. Use of Albino Mice as Test Animals for Determining Potency of Antineuritic Concentrates. W. Freudenberg and L. R. Cerecedo, Berkeley, Calif.—p. 207.
Factors Determining Ergosterol Content of Yeast: II. Carbohydrate Sources. O. N. Massengale, C. E. Bills and P. S. Prickett, Evansville, Ind.—p. 213.
*Inactivation of Crystalline Insulin by Cysteine and Glutathione: V. du Vigneaud, Alice Fitch, E. Pekarek and W. W. Lockwood, Urbana, Ill.—p. 233.
Gasometric Method for Determination of Lactic Acid in Blood. B. F. Avery and A. B. Hastings, Chicago.—p. 273.

Excess Calcium in Hypercalcemia.—Hess and his associates report that, when given in excessive amount, viosterol induces hypercalcemia in dogs which are fed a ration absolutely free from calcium. The failure of investigators to bring about this condition, and their conclusion that the source of the excess calcium in this form of hypercalcemia is the food and not the tissues, is due to the fact that viosterol was given in insufficient amounts. Hypercalcemia in dogs was greatly reduced by intravenous injections of a solution of sodium bicarbonate. Following reduction by such means, a marked excess of calcium and phosphorus was found in the lungs and the kidneys.

Ash Content of Bones.—Hess and his associates made a comparative study of the ash of the metaphyses and shafts of the bones of rats under normal and various pathologic conditions. Determinations of ash showed that osteoporosis of the shaft accompanies rickets in rats and runs parallel with the loss of ash in the rachitic metaphyses. In the course of healing, not only is the absolute amount of ash deposited in the metaphyses greater than that deposited in the shaft, but calcification of the metaphyses proceeds at a more rapid rate than in the shaft. It is possible to note by roentgenogram the deposition of as little as about 1 mg. of ash when laid down in the rachitic epiphysis. The bone ash of normal older rats is higher than that of younger rats, whereas the inorganic phosphorus of the serum is lower than that of the younger rats.

Nutritional Anemia.—On the basis of their studies on the effects of inorganic elements in the prevention and cure of nutritional anemia in young rats fed on whole milk diets, Beard and his associates draw the following conclusions: 1. Inorganic iron, as the hydrosulphuric acid filtrate of ferric chloride prepared from electrolytic iron, appears to have both a prophylactic and a curative action in this type of anemia. 2. Iron supplemented by copper, nickel, manganese or arsenic does not seem to be appreciably better in preventing anemia than iron alone.

Effect of Feeding Amino-Acids.—Rose conducted feeding experiments with diets in which the protein (other than that

present in 200 mg. of yeast employed daily as a source of the vitamin B factors) was replaced by mixtures of highly purified amino-acids. When all the well recognized protein components except hydroxyglutamic acid are incorporated in the food, rats receiving such diets rapidly lose weight during the first twelve days and then decline gradually or maintain weight to the end of the experiments. Since the addition of a protein fraction carrying the dicarboxylic amino-acids fails to improve the quality of the food, it is evident that the absence of hydroxyglutamic acid cannot account for the inability of the animals to increase in weight. The results appear to indicate that growth-promoting proteins contain at least one essential dietary component other than the twenty known amino-acids.

Inactivation of Insulin by Cysteine.—Du Vigneaud and his associates describe experiments in which they demonstrated that crystalline insulin is completely inactivated by cysteine and by glutathione. The conditions for this inactivation were determined. Insulin is soluble in dry liquid acetamide and in liquid ammonia. The inactivated material is practically insoluble in dry liquid acetamide. Attempts to reactivate the inactivated material by reoxidation and by alkali treatment have been uniformly negative. The insulin inactivated by the reducing agents mentioned fails to yield the heat precipitate that is so characteristic of insulin. The evidence points toward the fact that the reduction of the disulphide grouping is the cause of the inactivation and that the sulphydryl form of insulin is inactive.

Journal of Infectious Diseases, Chicago

49: 367-454 (Nov.) 1931

*Bacteriophage Adaptation. P. J. Beard, San Francisco.—p. 367.
*Mycobacterium (Sp.?), Ryan Strain, Isolated from Pleural Exudate. P. W. Beaven and S. Bayne-Jones, Rochester, N. Y.—p. 399.
Egg Yolk Agar in Culture of Tubercle Bacilli. R. D. Herrold, Chicago.—p. 420.
*Diphtheroid Phase of Streptococci. L. B. Jensen and H. B. Morton, Rochester, Minn.—p. 425.
*Precipitation Test for Syphilis: Influence of Diluents of Antigen on Intensity of Flocculation. E. Weiss, Chicago.—p. 436.
Utility of Phenyl-Mercury-Nitrate as Disinfectant. L. A. Weed and E. E. Ecker, Cleveland.—p. 440.
Electrical Behavior of Leishmania Donovani. A. J. Salle, Berkeley, Calif.—p. 450.

Bacteriophage Adaptation.—According to Beard, much of the discussion in the literature concerning bacteriophage adaptation is based on errors in technic and interpretation. Experimental work performed by him did not reveal evidence of adaptability within the limits of a definition formulated. If this definition is acceptable, then by d'Herelle's own criteria of life the bacteriophage is not living, since it does not possess the faculty of adaptation. The fact that a substance lacks certain of the properties of living matter does not eliminate the possibility that it may be endowed with other attributes of that state. It is not impossible that the bacteriophage may be of such a nature.

Mycobacterium, Ryan Strain.—Since 1928, Beaven and Bayne-Jones have been studying Mycobacterium, Ryan strain, an unusual type of acid-fast bacterium isolated from the pleural fluid of a child suffering from an extensive pulmonary disease resembling tuberculosis. In summarizing their attempt to classify the organism, they feel justified in expressing the opinion that it is neither a true nor an atypical tubercle bacillus. Its presence in abundance in the pleural fluid of the patient, discovered there by an examination made shortly after the removal of the exudate with a sterile glass syringe, seems to exclude the possibility of its being an extraneous contaminant of the specimen from which it was isolated. The violent cutaneous reaction of the child to a filtrate of the culture of the organism is additionally suggestive of a relationship of the organism to the pulmonary disease of the patient. Its pathogenicity for guinea-pigs seems to have been less than its pathogenicity for the child, although the course of the lesions in the one case, especially that of the pulmonary lesions, had much in common with the course in the other. The organism has numerous characteristics in common with, and at the same time significant differences from, acid-fast bacteria of the saprophytic group. It seems to the authors, therefore, to be an organism differing from any of these established groups and possibly a representative of a distinct group of acid-fast bacteria with low pathogenicity for man and other animals.

Diphtheroid Phase of Streptococci.—A strain of bacteria isolated by Jensen and Morton from the urine of a patient with cystitis could be made to mutate at will into streptococcal forms or into diphtheroid-like forms. On blood agar, diphtheroidal types were regularly produced, whereas in dextrose brain broth the strain revealed pure cultures of streptococci. In the diphtheroid phase the bacteria were avirulent when tested by intravenous injection into rabbits; in the streptococcal phase the bacteria were virulent and had elective localizing properties. On blood agar, cultures of organisms from the kidneys of rabbits in which elective localization had been demonstrated revealed only diphtheroid-like forms, whereas in dextrose brain broth the cultures yielded only streptococci, as revealed on examination of stained smears. Tests for agglutination and absorption of agglutinins disclosed that the diphtheroidal and streptococcal phases were antigenically distinct. Tests for production of peroxide indicated that in the diphtheroid phase the strain was a feeble producer of peroxide and that on repeated subculture on blood agar it lost this property. Studies of a strain of bacteria isolated from the blood of a patient with subacute bacterial endocarditis revealed a similar phenomenon.

Precipitation Test for Syphilis.—Weiss describes experiments which show that in the precipitation test for syphilis the sodium chloride solution can be successfully replaced by any one of a number of salts and acids. Salts formed by sodium and potassium with strong acids appear highly satisfactory. Among the acids, sulphosalicylic acid and phenol are most suitable. The property of precipitating proteins is not essential to flocculation of syphilitic serum. Hydrogen ion concentration, constitution, valence and molecular weight do not seem to have any direct bearing on the results.

Journal of Urology, Baltimore

26: 599-696 (Nov.) 1931

*Further Studies on Experimental Work on Probable Causes of Prostatic Hypertrophy. W. E. Lower and R. L. Johnston, Cleveland.—p. 599.
Preoperative Complications of Prostatectomy: Review of 352 Cases. W. B. Dakin, Los Angeles.—p. 609.
MacGowan and Parker's Operation for Suprapubic Cystotomy, G. MacGowan, Los Angeles.—p. 619.
Motion Picture Demonstration of Prostate Resection. A. J. Crowell and T. M. Davis, Charlotte, N. C.—p. 629.
Suture of Prostatic Capsule After Prostatectomy and Primary Closure of Bladder. J. C. Sargent, Milwaukee.—p. 639.
Progress of Prostatic After He Has Left Hospital. F. S. Crockett and W. W. Washburn, Lafayette, Ind.—p. 643.
*Osseous Metastasis in Carcinoma of Prostate. C. R. O'Crowley, M. Trubek and H. H. Goldstein, Newark, N. J.—p. 665.
Electrocoagulation in Carcinoma of Prostate. O. A. Nelson, Seattle.—p. 681.
Modified Pezzer Catheter. C. H. Chetwood, New York.—p. 693.
New Apparatus for Endoscopic Plastic Surgery of Prostate, Diathermy and Excision of Vesical Growths. J. F. McCarthy, New York.—p. 695.

Probable Causes of Prostatic Hypertrophy.—According to Lower and Johnston, certain simple glandular hypertrophies of the prostate which have not passed predominantly into the fibrotic stage may be benefited by suppression of the male hormone, or by suppression of the anterior pituitary gonad-stimulating hormone which regulates the production of the male hormone. Removal of the testes breaks the chain of continuity in this hormone mechanism and causes (1) prevention of further glandular proliferation and (2) atrophic changes and shrinking of the glandular tissue that is already present. Many hypertrophied prostates have already reached a stage that is predominantly fibrotic. In such cases a reduction of the hormone may be of doubtful value.

Osseous Metastasis in Carcinoma of Prostate.—O'Crowley and his associates present the case reports of two patients in the middle period of life with carcinoma of the prostate and extensive osteosclerotic metastasis. The patients did not show other manifestations of metastasis on clinical examination. The initial symptom in each case was "sciatic pain." In neither case was the anemia of great severity nor was there evidence of severe drain on the blood-forming organs as characterized by the finding of immature cells in the peripheral blood or of aplasia. In one case the spleen and liver had reverted to their embryonal functions undergoing myeloid metaplasia; in the other case the distal bones of the extremities had

become active in blood cell production. In both cases hematopoiesis was maintained to a degree not far from normal. In both patients the diagnosis was confused with that of Paget's disease because of the failure, at first, to interpret the roentgenographic observations properly. On the basis of their observations the authors conclude that carcinoma of the prostate may exist with relatively few symptoms and little enlargement of the gland and result in generalized osseous metastasis with almost no other involvement. Metastasis in bone, once initiated, would seem to proceed through the skeleton progressively and independently of either the blood stream or the regional lymph nodes. In the face of almost universal marrow involvement by metastatic deposits, the anemia need not be of very great severity.

Laryngoscope, St. Louis

41: 733-796 (Nov.) 1931

The Hard-of-Hearing Child. M. A. Goldstein, St. Louis.—p. 733.
Roentgenology as an Aid in Practice of Otology and Rhinology. F. E. Hasty, Nashville, Tenn.—p. 747.
The Hard-of-Hearing School Child. R. M. Taylor, East Haven, Conn.—p. 753.
Biologic Factor in Analysis of Otosclerosis or Otitic Senility. H. L. Warwick, Fort Worth, Texas.—p. 757.
Agranulocytic Angina. J. W. Babcock, New York.—p. 766.
Retropharyngeal-Esophageal Abscess: Case. J. I. Klepper, New York.—p. 769.
Laryngeal Stenosis: Case Presentation. J. De Armas, Philadelphia.—p. 775.
Tuberculous Laryngitis Treated with Artificial Sunlight: Three Cases. M. L. Harris, Brooklyn.—p. 777.
Case of Severe Cardiospasm Mistaken and Treated for Carcinoma of Esophagus. J. Miller, New York.—p. 780.
Stammering: Bibliography of Past Decade, 1921-1930, Inclusive. C. S. Bluemel, Denver.—p. 783.

Medical Journal and Record, New York

84: 469-520 (Nov. 18) 1931

Gall Tract Disease: Anatomy, Physiology and Investigation by Means of Duodenal Tube. H. J. Bartle, Philadelphia.—p. 469.
Histologic Verification of Efficacy of Free Transplantation of Nipple. M. Thorek, Chicago.—p. 474.
Gastro-Intestinal Neuroses and Their Management. J. S. Diamond, New York.—p. 476.
Origin of Light Therapy. H. Goodman, New York.—p. 481.
Modern Conception of Deafness. H. Hays, New York.—p. 482.
Medical Survey. G. Desparois and H. V. Soper, Los Angeles.—p. 485.

134: 521-572 (Dec. 2) 1931

Menace to Industry: Some Pertinent Thoughts on Malingering. A. W. Hammer, Philadelphia.—p. 521.
Albuminuria in Iodine Deficiency. E. Grimes, Des Moines, Iowa.—p. 523.
Modern Conception of Deafness. H. Hays, New York.—p. 525.
Pulmonary Suppuration, Results of Early and Late Recognition. S. Goldberg, Philadelphia.—p. 527.
Early Diagnosis and Treatment of Renal Tuberculosis. N. Taube, New York.—p. 529.
Dynamic Retinoscopy and General Practitioner. J. I. Pascal, Boston.—p. 533.
Gall Tract Disease: Anatomy, Physiology and Investigation by Means of Duodenal Tube. H. J. Bartle, Philadelphia.—p. 534.
Strangulated Femoral Hernia Complicated by Fecal Fistula. A. Friedman, New York.—p. 537.

New England Journal of Medicine, Boston

205: 1077-1130 (Dec. 3) 1931

Dermoid Cysts and Teratomas of Mediastinum: Case. R. C. Cochrane and S. J. G. Nowak, Boston.—p. 1077.
Clinical Aspects of Thyroid Malignancy. H. M. Clute, Boston.—p. 1083.
Some Clinical Aspects of Deficiency Diseases. C. S. Keefer, Boston.—p. 1086.
Some Types of "Primary" Anemia and Their Treatment. W. Dameshek, Boston.—p. 1093.
Significance of Blood Count in Appendicitis. L. Allen, Burlington, Vt.—p. 1105.

205: 1131-1176 (Dec. 10) 1931

*Plastic Reconstruction of Lower Lip. E. M. Daland, Boston.—p. 1131.
*Etiology of Bronchiectasis. M. S. Lloyd, New York.—p. 1143.
Primary Torsion of Great Omentum: Case. E. D'Errico, Boston.—p. 1147.
Note on Relation Between Blood Cholesterol and Basal Metabolic Rate. G. P. Grabfield and A. G. Campbell, Boston.—p. 1148.
Mastoiditis in Scarlet Fever: Analysis of 2,000 Cases at Haynes Memorial Hospital. H. L. Babcock, Boston.—p. 1149.

Plastic Reconstruction of Lower Lip.—An operation is described by Daland for the partial or complete restoration of the lower lip following the removal of extensive cancer. Mucous membrane flaps are used for the lining of the flaps, and the skin is taken from the nasolabial folds. Nineteen case histories are given in which this operation has been used. Three of the patients have died without recurrence, one is alive with recurrence, seven have died of cancer, and the others have been well for periods from one year and two months to four years and seven months. Even though the growths were highly malignant in some cases, operation was successful. The worst results were obtained in the cases in which the lesions extended well down toward the chin, for extension to bone usually took place.

Etiology of Bronchiectasis.—According to Lloyd, permanent loss of pulmonary volume is due to fibrosis of the lung. This loss of volume sets up a mechanical imbalance in the chest, which results in an outward traction on the bronchial walls and is followed by changes, in their attempt to accommodate the shrinkage of the lung. The degree of bronchiectasis depends on the end balance between loss of volume, on the one hand, and accommodating changes, on the other. The author presents cases to illustrate and support this theory.

New York State Journal of Medicine, New York

31: 1435-1498 (Dec. 1) 1931

Interpretation of Bladder Symptoms. V. Vermooten, New Haven, Conn.—p. 1435.
Removable Lag Bolts for Fracture Fixation. H. J. Knickerbocker, Geneva.—p. 1438.
*Treatment of Neurosyphilis, Other Than Paresis, with Malaria. A. Paige, R. J. Rickloff and E. D. Osborne, Buffalo.—p. 1441.
Idiopathic Detachment of Retina and Its Treatment. E. E. Blauuw, Buffalo.—p. 1447.
Treatment of Infections. H. S. Martin and L. L. Klostermyer, Warsaw.—p. 1452.
Treatment of Dermatophytosis. P. E. Bechet, New York.—p. 1456.

Neurosyphilis and Malaria.—Paige and his associates believe that malaria or some other method of fever therapy is a valuable adjunct in the treatment of neurosyphilis. From a study of the literature and from their own experience they believe that the ideal time for malaria therapy is from the second to the sixth year of infection. The percentage of serologic cures will gradually decline in proportion to the duration of the infection. Malaria therapy should be preceded by adequate arsphenamine and bismuth therapy to the extent of at least two or three full courses and followed likewise by arsphenamine, bismuth compounds or tryparsamide as indicated. With a thorough understanding of the applications and limitations of malaria therapy, it is a safe and efficient method of treatment.

Public Health Reports, Washington, D. C.

46: 2837-2897 (Nov. 27) 1931

Pathology of Eastern Type of Rocky Mountain Spotted Fever. R. D. Lillie.—p. 2840.

Rhode Island Medical Journal, Providence

14: 169-186 (Nov.) 1931

Erysipelas. D. L. Richardson, Providence.—p. 169.
Retinal Hemorrhages After Blood Transfusion: Sixty Cases. H. C. Messinger and A. W. Eckstein, Providence.—p. 171.

Southwestern Medicine, Phoenix, Ariz.

15: 503-544 (Nov.) 1931

Relation of Eye to General Diseases. W. C. Finnoff, Denver.—p. 503.
Bacteriophage in Treatment of Pyogenic Infections of Skin. L. M. Smith, El Paso, Texas.—p. 509.
Sources of Infant Mortality in Western States. J. W. Amesse, Denver.—p. 511.
"Avertin" Anesthesia in Operations About Head. M. P. Palmer, El Paso, Texas.—p. 514.
Visit to Mayo Clinic. W. L. Brown, El. Paso, Texas.—p. 518.
Common Mistakes in Removal of Foreign Bodies Embedded in Cornea. B. H. Britton, El Paso, Texas.—p. 520.
Laboratory Diagnosis of Syphilis. J. A. Kolmer, Philadelphia.—p. 523.
Retinal Vascular System. D. F. Harbridge, Phoenix, Ariz.—p. 526.
Lobar Pneumonia Complicated by Acute Empyema: Case. L. L. Green, El Paso, Texas.—p. 530.

Tennessee State Medical Assn. Journal, Nashville

24: 407-446 (Nov.) 1931

Congenital Megalo-Ureter. W. D. Anderson, Chattanooga.—p. 407.
Cerebrospinal Rhinorrhea. W. W. Wilkerson, Nashville.—p. 412.
Biologic Germicides. J. A. McIntosh, Memphis.—p. 416.
Treatment of Wounds. J. A. Mitchell, Tullahoma.—p. 419.
What Shall We Do About Refraction? E. W. Patton, Chattanooga.—p. 422.
Eye Injuries. W. L. Howard, Memphis.—p. 426.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

6: 159-178 (Nov.) 1931

Climatic Factor in Treatment of Tuberculosis: I. Treatment by British Climate. G. A. Hoffman.—p. 161.
*Id.: II. Characteristics of Alpine Climate. B. Hudson.—p. 163.
Physical Agents in Treatment and Prevention of Pulmonary Tuberculosis. J. B. Alexander.—p. 165.
Ultraviolet Irradiation in Prevention of Tuberculosis. C. H. C. Toussaint and E. J. MacIntyre.—p. 167.
Penetration of Ultraviolet Rays into Live Animal Tissue. W. T. Anderson, Jr., and H. D. Fraser.—p. 170.
Radiologic Diagnosis. B. Leggett.—p. 172.

Climatic Factor in Treatment of Tuberculosis.—According to Hudson, it is wrong to think that the high mountain climate is advantageous only during the winter. It is the clinical experiences of the medical men of Davos that the summer is as beneficial to suitable cases as the winter, if not more so. Once a case is diagnosed, it is therefore better to send the patient straight out and not, as is often done, to wait until winter. The length of the sojourn is also important. Many patients, even those who can afford a long stay, are advised to spend from three to six months. This is not enough to obtain a really consolidated recovery in a case of tuberculosis. It is better, if possible, to remain for two full winters and the intervening summer. A great danger in returning too soon to crowded cities is the liability to contract secondary infections, apparently caused by bacteria of the "filter-passing" groups. They produce catarrh of the respiratory organs, lower the general resistance, and so expose the patient to graver secondary infections, such as the pneumococcal. They also render him liable to a relapse of any tuberculous infection remaining in the lungs. The patient should stay long enough to insure proper consolidation of recovery, so that he can successfully withstand these secondary infections.

British Journal of Radiology, London

4: 533-620 (Nov.) 1931

*Preoperative and Postoperative Treatment of Cancer of Breast by Radiation (Metastasis Excluded). J. E. A. Lynham.—p. 534.
Lines of Arrested Growth in Long Bones in Childhood: Correlation of Histologic and Radiographic Appearances in Clinical and Experimental Conditions. H. A. Harris.—p. 561.
Notes on Exhibition of Apparatus at Third International Congress of Radiology. W. V. Mayneord.—p. 589.
Localization of Pleural Adhesions. J. V. Sparks and F. G. Wood.—p. 592.
Treatment of Arthritis by Diathermy Applied to Pelvic Organs. C. A. Robinson.—p. 599.
Cabinet for Storage of Radium Needles. H. P. Walmsley.—p. 608.

Treatment of Cancer of Breast by Radiation.—Lynham believes that in the treatment of cancer of the breast by radiation one has two separate effects to consider: the lethal effect on the actively dividing cells of a tumor, and the cumulative effect on the resting cells of the neoplasm. Both effects are necessary if one is to destroy the tumor. The first is accomplished by adequate intensity of radiation, sustained through a sufficient period to influence the succeeding generations of actively dividing cells. The second may be accomplished by successive irradiations spaced out over a considerable time so as to produce the cumulative effect on the latent cells without doing serious injury to the surrounding tissues of the body. The technic of treatment has been based largely on theories as to the effects produced on cells in active division. Massive single treatments have been urged as most likely to bring about the desired result; but overdosage should be avoided, for it is not sufficiently recognized that, when irradiation has been too intense, the temporary disappearance of a malignant growth may be merely incidental to a slow but inevitable process of deterioration in the tissues, leading to the death of the patient. Later, divided doses of less intensity have been advocated in the hope of influencing the malignant cells, with less injury to the matrix of the tumor. Comparatively weak doses may sterilize a neoplasm, if sustained over a considerable period of time. The saturation method suggested by Kingery and developed by Pfahler has produced results in breast carcinoma more satisfactory than were achieved either by massive intensity or by weaker dosage distributed over a long period. Success in treatment appears to depend on whether it can accomplish a dual objective—extinction of actively dividing cells and ultimate inhibition of activity in those which are latent. When one considers this view in relation to removal of a tumor by diathermy or excision, it seems to be reasonable that preoperative irradiation should be directed toward the inhibition of the active cells: it should be relatively intense; it should be delivered within a comparatively short period of time; it should include the whole breast and the related lymphatic areas; it should not be of such a character as to damage the tissues or to interfere with the healing of the operation wound, and sufficient time should be allowed for the tissue effects to take place (ten to thirty days) before the operation. Postoperative irradiation has a double duty to perform. At first there are possibly unsuspected actively dividing cells growing in the tissues. Whether present or not they must be presumed to exist, and dosage at first must be based on this supposition. There has been much controversy as to the time at which the treatment should begin. The author believes that the operation wound should be allowed to heal; that three weeks or so should elapse before the irradiation, to enable the tissues to recover from the trauma of the operation. If preoperative irradiation has been performed there need be no misgivings in waiting for the tissues to recover from the disturbance due to the operation. The first series of exposures should in general follow the principles of the preoperative irradiation, but the intensity of each dose should be reduced and the time spaced out over a longer period. Afterward the question of latent cells has to be considered, and it seems probable that they can be controlled only by divided doses extended over a prolonged period and including wide areas of the body.

British Medical Journal, London

2: 879-928 (Nov. 14) 1931

*Trigeminal Neuralgia. G. Jefferson.—p. 879.
*Chronic Microcytic Anemia. L. J. Witts.—p. 883.
Simple Achlorhydric Anemia Treated by Iron. D. C. Hare.—p. 888.
Epidemic of Chorea in Family. D. Paterson and L. J. Horn.—p. 893.
Brill's Disease: Case. H. M. Royds-Jones.—p. 894.

Trigeminal Neuralgia.—Jefferson believes that it is wise to advise a patient to have at least one peripheral injection before proceeding to operation, especially in the less severe case clearly limited to one division. The advantage is that he has a foretaste of the numbness and the curious and frequently accompanying feeling of swelling that will be permanent after the root section, an anesthesia which must always come as something of a surprise. Preoperative advice, though useful, can never adequately describe the actual feeling. However, if a fractional root division is to be performed, preliminary injections are not so necessary, as some sensation is retained. As to injections into the ganglion itself, this method should be restricted to those who are judged to be physically incapable by reason of their age or of coexisting disease to undergo operation. The author has arbitrarily fixed 70 years as a limit, but he has no doubt that a root section would be feasible even in some older persons. In younger persons and especially those in the forties and fifties fractional root section is infinitely the better course. If operation had nothing better to offer than a complete and dense anesthesia of the face, with the risks consequent on total interruption of the ophthalmic fibers, there would be nothing to choose between such an operation and alcohol injection; indeed, the balance would be in favor of the latter except after its repeated failure. But fractional root section offers something that alcoholic destruction of the ganglion cannot give; namely, preservation at will of such fibers as one wishes to keep. This being the case there seems to be little room for argument as to which is the method of choice, though the exigencies of circumstances may at times induce one to use a method that is both theoretically and practically inferior. Alcohol injections are in any case more uncertain than operation. The not infrequent result of injections is that one achieves rather less than one hoped for, while at times, using a precisely similar technic, one obtains more, unfortunately, than one anticipated. It must not be forgotten that trigeminal neuralgia is a really serious condition and one does not make it less serious by using a method which to the casual eye is simple and innocuous and yet may require much repetition and

bring about an occasional catastrophe. But in the aged and the infirm one must continue to use this somewhat uncontrollable method.

Chronic Microcytic Anemia.—Witts states that chronic microcytic anemia, for which none of the usual causes of secondary anemia can be found, occurs with considerable frequency in women of reproductive age. The women affected are generally of asthenic constitution, and achlorhydria is present in 80 per cent. The anemia is chronic and shows little or no tendency to improve until after the menopause, when it may disappear spontaneously. The spleen is palpable in one third of the cases but recedes beneath the costal margin on repair of the anemia. Superficial glossitis, indistinguishable from the sore tongue of pernicious anemia, is present in half of the cases. Stomatitis also occurs. In about 15 per cent the inflammation spreads to the pharynx, producing dysphagia, which may be the presenting symptom. Treatment is simple and effective. All patients respond to iron, provided it is given by the mouth in large doses for an adequate period of time. Liver is of no value. Owing to the risk of relapse, it is advisable to continue a small maintenance dose of iron after the anemia has been cured.

Journal of Physiology, London

73: 219-330 (Nov. 14) 1931

Electrical Stimulation of Muscle Through Ringer's Solution. L. Lapicque. —p. 219.
After-Image of Black: With Mathematical Appendix by J. H. C. Thompson. R. S. Creed.—p. 247.
Measurement of Red Cell Volume: III. Alterations of Cell Volume in Extremely Hypotonic Solutions. E. Ponder and G. Saslow.—p. 267.
*Influence of Vagus Nerves on Secretion of Insulin. G. A. Clark.—p. 297.
Protein Content and Osmotic Pressure in Serum of Young Animals. G. A. Clark and H. E. Holling.—p. 305.
State of Carbon Dioxide in Blood and Hemoglobin Solutions, with Appendix on Some Osmotic Properties of Glycine in Solution. R. Margaria.—p. 311.

The Vagus and Insulin Secretion.—Clark reinvestigated the function of the vagus nerve supply to the islets of Langerhans in anesthetized rabbits and cats. Anesthesia of sufficient depth for surgical intervention in rabbits and probably in cats prolongs the hyperglycemia following intravenous injection of dextrose. In two rabbits the dextrose tolerance under anesthesia was increased seven to ten days after both vagi were cut below the diaphragm. In cats the tolerance was increased two to three hours after the right vagus was cut, and unaltered after the left vagus was cut below the diaphragm. The cutting of the right vagus below the diaphragm in cats under anesthesia caused an immediate slight fall in blood sugar, which confirms earlier experiments and suggests the presence in this nerve of fibers carrying tonic inhibitory impulses to the islets of Langerhans.

Lancet, London

2: 1113-1168 (Nov. 21) 1931

Preventive Medicine for Medical Student. G. Newman.—p. 1113.
*Keratoderma Blennorrhagicum: Its Histology, Clinical Characteristics, and Treatment: Eight Cases. D. Lees and G. H. Percival.—p. 1116.
*Calcium and Phosphorus Metabolism in Late Rickets: Case with Parathyroid Hyperplasia. G. C. Linder and D. G. M. Vadas.—p. 1124.
Empyema Thoracis: Method of Maintaining Negative Pressure Drainage. A. T. Edwards.—p. 1126.
*Neurologic Complications of Serum Treatment: Case. I. M. Allen.—p. 1128.

Keratoderma Blennorrhagicum.—In each of eight cases of keratoderma blennorrhagicum observed by Lees and Percival there was undoubted evidence of a severe systemic gonorrhea, complicated by an arthritis of varying severity. Clinically all the patients were profoundly toxemic. In none of the eight cases was it possible to isolate the gonococcus by blood culture, nor in films or culture, even from the earliest vesicular lesions. In spite of this, the author has no doubt that there is a definite association between the severe metastatic gonorrhea and the skin eruption, and that the organism or its toxins act directly on the skin, or that the toxins act indirectly on it through the nervous system and lead to atrophic nerve disturbances.

Metabolism in Late Rickets.—Linder and Vadas describe a case of late rickets with a partial hyperparathyroid syndrome. The patient showed the accentuation of the malacia in the bones of the trunk characteristic of osteomalacia. It was distinguished from osteomalacia by its onset in adolescence, the widening of the epiphyses and the lack of ossification in the epiphyseal cartilages, while the age incidence, the relative preservation of the long bones, and the good definition of the epiphyseal lines separated it from rickets. Late rickets appeared to be the correct classification. The effect of excision of an enlarged parathyroid was relief of pain without any effective change in the calcium phosphorus metabolism.

Neurologic Complications of Serum Treatment.—Allen classifies the neurologic complications of serum treatment in four groups: (1) a radicular type, resembling an Erb-Duchenne paralysis of acute onset; (2) a neuritic type, in which single nerve trunks are affected; (3) a polyneuritic type, in which the clinical picture resembles that of toxic polyneuritis, and (4) a cerebral type, in which symptoms and physical signs probably resulting from intracranial or cerebral edema are the prominent features. As a rule the prognosis of the neurologic complications of serum treatment is good.

Medical Journal of Australia, Sydney

2: 533-568 (Oct. 31) 1931

Some Aspects of Diabetic Coma and Arteriosclerosis. L. W. Dunlop. —p. 533.
Typhoid Carriers: Observations on Their Investigation and Treatment. A. R. Southwood, E. B. Thomas and R. B. Knight.—p. 541.
Affections of Peripheral Nerves. A. W. Campbell.—p. 544.
Affections of Peripheral Nerves. J. C. B. Allen.—p. 546.

2: 569-602 (Nov. 7) 1931

Lipiodol and Lungs. J. F. Mackeddie.—p. 569.
*Trauma and Heart. S. A. Smith.—p. 575.
Trauma in Relation to Organic Visceral Disease. C. E. Corlette.—p. 583.
*What Makes Gastric or Duodenal Ulcer Perforate, and What Protects It? C. E. Corlette.—p. 587.
Secondary Carcinoma of Bone. L. J. Clendinnen.—p. 590.

Trauma and the Heart.—According to Smith, severe exertion does not cause damage to the healthy heart. The diagnosis of "strain" of the healthy heart is frequently made in error, the condition being a neurosis. When the apparently healthy heart does fail after exertion, failure is due to lack of contractile force of the heart muscle fibers injured by active infection. Exertion may cause the diseased heart to fail if it precipitates fibrillation of the auricles. Severe heart failure with normal rhythm occurs much less frequently than with arrhythmia. Occlusion of a main coronary artery or branch may cause sudden heart failure with normal rhythm. Exertion plays no part in this. A heart that is the subject of active infection may be caused to fail with normal rhythm by exertion. The primary factor in failure of the diseased heart is lack of contractile force and not dilatation of the heart.

Perforation of Gastric and Duodenal Ulcers.—Corlette reviews the physical stresses to which a gastric or duodenal ulcer may be exposed. It is shown that by the operation of Boyle's law no increase of general intra-abdominal pressure can cause a strain in an ulcer, and perforation cannot occur from that cause. It is shown that contraction of the muscular walls of the stomach will increase the hydrostatic pressure within that organ without increasing the general intra-abdominal pressure, and if the difference in pressure passes the bursting strain of an ulcer, perforation must occur. There are some other theoretically possible modes of causing perforation by pressure. The weight of a column of gastric contents resting on the surface of an ulcer might conceivably rupture it. Such an ulcer would only be on the greater curvature, at least in the erect position. In collision accidents the gastric contents may be thrown in the direction of an ulcer. The kinetic energy developed is measured as half the product of the mass into the square of the velocity. The "mass," however, is that of a column of unit sectional area in the line of force, not that of the whole gastric contents. If the kinetic energy is great enough, it could cause the rupture of an ulcer. In falls from a height, kinetic energy is liberated according to a similar formula, but the mass factor depends on the vertical depth of a column of fluid immediately above the ulcer, not on the weight of the total gastric contents. If there is not fluid vertically above the ulcer, this mass factor does not exist. With sufficient kinetic energy liberated to do the work, an ulcer could be ruptured.

Revue de Chirurgie, Paris

50: 553-618 (Oct.) 1931

Posttraumatic Ligamentary Laxity. M. R. Leriche.—p. 553.
"Antishock" Method of Disarticulation of Hip. P. Huard and M. Montagné.—p. 558.
*Treatment of Open Fractures of Leg in General Practice. J. Creyssel and M. Armanet.—p. 582.
Treatment of Cancer. M. Pierre-Nadal.—p. 601.

Open Fractures of Leg.—Creyssel and Armanet recommend the consideration of two factors in the treatment of open fractures of the leg: (1) the necessity for an operation, including an early surgical cleansing, and (2) the condemnation of immediate closure of the skin over the lesion, since risks of the exogenous secondary infections are more illusory than the gravity of the primary infectious complications. The orthopedic problem is complex, depending on the character of the lesion. The methods of treatment (simple reduction with a plaster-of-paris trough, external fixation, various methods of osteosynthesis) depend on the particular indications. In the majority of cases, one can resort to an osteosynthesis and obtain a reduction and a highly satisfactory result by simple manual maneuvers and immobilization in plaster of paris. However, if osteosynthesis seems necessary, that is, if the immobilization of fragments is impossible or if the loss of substance is too great, the fracture can be left open and watched for early accidents; the most simple and the least traumatic intervention consists of encircling the fragments with a wire in oblique fractures and using the Lambotte treatment in other fractures. The results obtained (forty cases under observation) prove the value of conservative treatment; nevertheless, if the surgeon is confronted with very large lesions, he should recognize the necessity for early amputation of the limb, because frequently the life of the patient is at stake and, usually, extremities conserved under unfavorable conditions give only mediocre functional results.

Annali Italiani di Chirurgia, Naples

10: 1111-1242 (Oct. 31) 1931

*Phrenicectomy and Thoracoplasty in Pulmonary Tuberculosis. C. Guerriero.—p. 1123.
Sterilization of Skin of Operative Field and of Hands of Operator. D. Vallone.—p. 1154.
*Periureteral Sympathicectomy and Periarterial Sympathicectomy. M. Cusani.—p. 1161.
Resection of Inferior Mesenteric Plexus. G. Pieri.—p. 1183.
*Diverticulitis and Appendicitis: Removal of Meckel's Diverticulum and Appendix. A. Scanga.—p. 1190.

Phrenicectomy and Thoracoplasty in Pulmonary Tuberculosis.—Guerriero summarizes his observations in thirty-seven cases and gives the general principles that regulate and justify the application of phrenicectomy and thoracoplasty to pulmonary tuberculosis.

Periureteral Sympathicectomy and Periarterial Sympathicectomy.—Cusani experimented with periureteral sympathicectomy, together with removal of the tunica adventitia of the ureter, for the purpose of ascertaining whether this operation, which is so similar to periarterial sympathicectomy, has similar anatomosurgical and functional effects. The experiments were carried out on large dogs and the adventitia was either removed with a knife or destroyed by means of applications of phenol or silver nitrate for a distance of from 1 to 4 cm. and at various points of the ureter. The results secured differed greatly from the effects of periarterial sympathicectomy; for, while in the latter there are regenerative processes that may bring about the anatomic and functional restoration of the vessel, in periureteral sympathicectomy there are, on the other hand, reaction processes the conclusion of which is sometimes a notable dilatation of an aneurysmal type and sometimes the development of a desmoid that finally obstructs in part the lumen while above the sympathicectomized tract there develop distending processes, extending to the kidney, of a hydronephrotic type, which are progressive.

Diverticulitis and Appendicitis.—Scanga gives a detailed clinical history of a case of appendicitis. At the operation on the appendix the presence of a Meckel's diverticulum chronically insinuated was discovered. Both the appendix and the Meckel diverticulum, which had the shape and size of a small pear, were removed, and the patient made an uneventful recovery. It was the mass observed in the vicinity and to the right of the umbilicus that induced the author to continue the search in the abdominal viscera after the appendicectomy; otherwise the presence of the Meckel diverticulum would have passed unobserved. Hence the author concludes that it is good practical surgery in complex symptomatologies, especially of appendicular origin, not to limit the attention to the appendix but to extend the examination, when feasible, to the other intra-abdominal organs, in search of possible concomitant lesions.

Policlinico, Rome

38: 589-652 (Nov. 15) 1931. Surgical Section

*Osteochondritis Dissecans. I. Barcaroli.—p. 589.
Abscess in a Spleen Infected with Malaria: Case. A. Botto-Micca.—p. 606.
Polycystic Kidney: Case. A. Calcagni.—p. 620.
Adenocarcinoma of Sweat Glands. L. Moriconi.—p. 634.
Distribution of Nerve Trunk Fibers and Surgery of Peripheral Nerves. F. Purpura.—p. 643.

Osteochondritis Dissecans.—Barcaroli brings out that in his case the symptoms presented by the patient from the beginning, soon after the suffered trauma, must be considered as due to the fracture of the internal meniscus, which was not detected. As time went on, the functional disturbances became more marked, not only on account of the lesion of the meniscus but also because of the lesion of the semilunar cartilage and, to a slight extent, because of the focus of osteochondritis, which was slowly developing in the femoral epiphysis. After the first operative intervention, the patient reacquired the almost complete function of the limb. He no longer had the feeling of lacking a knee joint, but there was still a vague pain sensation within the joint and an unpleasant feeling in passing from the flexed to the forced extended position. In view of the persistence of these slight disturbances, the author considered that they were due to some other cause and the roentgen examination revealed the focus of osteochondritis dissecans in the articular surface of the inner condyle. This was discovered in an initial stage of evolution, for the osteocartilaginous fragment, although it appeared to be detached from its epiphyseal niche, was still covered with perfectly normal incrustation cartilage, which presented no continuity with the rest of the cartilaginous surface of the femoral condyle. The roentgen examination did not reveal any abnormal development of the intercondyloid eminence or of the medial tubercle. After the second intervention, the recovery was rapid and permanent. The author discusses also the etiology, the symptomatology, the diagnosis and especially the pathogenesis of osteochondritis dissecans, which still is often wrongly diagnosed.

Riforma Medica, Naples

47: 1659-1692 (Nov. 2) 1931

*New Researches on Participation of Spleen in Regulation of Glycemic Index. G. De Flora.—p. 1664.
*Agranulocytic Angina Due to Arsphenamine. G. Delpiano.—p. 1669.

Participation of Spleen in Regulation of Glycemic Index.—De Flora concludes from his observations on nine patients that induced cutaneous perfrigeration of the splenic region produces in all cases a diminution of glycemia, ranging from a minimum of 0.19 to a maximum of 0.57 Gm. per thousand cubic centimeters of blood. The perfrigeration of the opposite segment metamere also reduces the glycemia but in an absolutely inconstant manner and to a much less extent. Only in one case was there a diminution of the glycemia—following perfrigeration of the hepatic metamere—that was more marked than from the perfrigeration of the splenic metamere, but such diminution does not persist and after forty-five minutes tends to return to normal. There may be an increase of the glycemia after perfrigeration of the hepatic metamere, which confirms the inconstant behavior of glycemia modified by this means. Hypoglycemia produced by perfrigeration of the splenic region tends in general to persist after an hour and a half. The perfrigeration of the anterior surface of the hip does not produce sensible changes of the glycemic index.

Agranulocytic Angina Due to Arsphenamine.—Delpiano reports two cases of agranulocytosis due to arsphenamine, which developed at Turin almost simultaneously. He points out that these are the first observations on the subject made in Italy. He raises the question whether the agranulocytic

syndrome following arsphenamine administration is in reality so rare and advances the opinion that, with more systematic control of patients under treatment, deficiency of granulocytes as an accident of arsphenamine therapy might possibly be found more frequently than is supposed.

Rivista di Clinica Medica, Florence

32: 593-640 (July 31) 1931

*Treatment of Gastroduodenal Ulcers with Injections of Pepsin. U. Polerà and G. Ranieri.—p. 607.
Kürten Test for Diagnosis of Endocarditis Lenta. E. Vivoli.—p. 620.

Treatment of Gastroduodenal Ulcers with Injections of Pepsin.—Polerà and Ranieri conclude that, while pepsin treatment does not solve the therapeutic problem of gastroduodenal ulcers, it constitutes a marked advance in the field of the medical treatment of these syndromes, since, in a short time, it relieves all the subjective disturbances and influences favorably the general condition of the patient, enabling him to adopt a more abundant, more varied and more nutritive diet. Since gastroduodenal ulcers are lesions of a decidedly chronic type, it is necessary for the treatment to be also prolonged, in order that the results may be more certain and more constant. Pepsin therapy has no contraindications and presents no dangers. It may cause, however, focal reactions, which in the authors' cases were not at all alarming. Pepsin therapy is recommended in every case of gastroduodenal ulcer but is indicated especially in recurrences in which the surgeon can do little or nothing. The technic consisted of intramuscular injections, on alternate days, of 2 cc. of a 10 per cent solution of pepsin, plus a 20 per cent solution of sodium benzoate. A cycle consisted of twelve injections. After each cycle a seven day interval was interposed. In preparing the solution, the pepsin is added to the sodium benzoate at hourly intervals, a little at a time; the solution is filtered first through wet cotton and then through filter paper. The solution, which should be perfectly clear, is tyndallized at 56 C. for two hours on three consecutive days and is then bottled, or, better still, it is first bottled and then tyndallized.

Archivos Españoles de Pediatría, Madrid

15: 577-640 (Oct.) 1931

*Generalized Muscular Hypertonia in Cachectic Infants. J. C. Navarro.—p. 577.
Dwarfism: Two Cases. J. M. Pardo Urdapilleta and E. C. Gargollo.—p. 591.

Generalized Muscular Hypertonia in Cachectic Infants.—Navarro reports two cases of generalized muscular hypertonia in cachectic infants aged 3 and 11 months, respectively, who were fed first with human milk and later with cow's milk. In one case the regulation of the diet did not modify the patient's condition whereas the evacuation of a large pneumococcal pleural effusion brought about complete recovery both of the nutritional disturbances and of the hypertonic condition; but in the other case the regulation of the diet produced a simultaneous improvement of the nutritional condition and of the hypertonia, and the patient recovered completely. However, the good results in this case may not have been caused by the diet alone, since this infant before being placed on the diet had an attack of asthmatic bronchitis and was given antisyphilitic treatment. It seems probable that the patient had congenital syphilis. The author states that the two main postulates for the development of generalized muscular hypertonia in infants are a cachectic condition from nutritional derangements and the absence of organic diseases of the nervous system. The nutritional disorders, however, are not always caused by a flour diet, contrary to the common belief that this condition represents a dystrophy from a flour diet. Some other factors, such a local infection (septicemia caused by a pneumococcal pleural effusion and probable syphilis in the author's cases), may act as coadjuvants for the development of the disease. The improvement till recovery from the nutritional disturbances parallels that of the hypertonia. Some points of the mechanism of generalized muscular hypertonia in dystrophy are still unknown. The condition probably is in relation with changes in the composition of the fluids of the body and tissues. However, it is obvious that it is not related to spasmophilia and even when the two diseases coexist they are independent of each other.

Archiv für Gynäkologie, Berlin

147: 1-228 (Oct. 22) 1931

Results of Cesarean Operations During 1930. Doerfler.—p. 1.
Observations on Placentas of Twins and Similarity Diagnosis. Marie-Therese Lassen.—p. 48.
Causes of Icterus Neonatorum. G. Haselhorst and K. Stromberger.—p. 65.
Idem. K. J. Anselmino and F. Hoffmann.—p. 69.
Administration of Folliculin to Premature Infants. W. Schiller.—p. 72.
*Investigations on Heart Action of Fetus: Influence of Oxygen and of Carbon Dioxide on Frequency of Fetal Heart Beat. W. Rech.—p. 82.
Hypophyseal Tumor and Pregnancy. F. W. Winter.—p. 95.
Complement Content of Blood of Gravidas in Physiologic and Pathologic Conditions. P. Goldschmidt-Fürstner.—p. 113.
Structural Changes of Protein of Blood Plasma During Normal Pregnancy. A. von Latzka.—p. 120.
Typical Structure of Metastases of Hydatid Mole. M. Gygax.—p. 129.
Roentgen Irradiated Adenocancroid and Isolated Tuberculosis of Uterus. J. Novak and F. Windholz.—p. 148.
Investigations on Joints of Pelvic Girdle with Especial Consideration of Their Changes During Pregnancy and Confinement. L. Haslhofer.—p. 169.

Influence of Oxygen and of Carbon Dioxide on Frequency of Fetal Heart Beat.—Rech's experiments to influence the fetal heart action by changing the ratio of the blood gases gave the following results: Contrary to his expectations he found that oxygen deficiency, excess of oxygen and excess of carbon dioxide in the fetal blood do not have a noticeable influence on the heart action of the fetus. This observation is significant in that it shows that the fluctuations in the frequency of the fetal heart beat during the process of birth cannot be due, as many authorities believe, to a temporary disturbance in the placental respiration. Even theoretical reasoning leads to the conclusion that that theory is untenable.

Archiv für klinische Chirurgie, Berlin

166: 549-808 (Oct. 19) 1931

Therapeutic Results of Sun and Fresh Air Treatment in Tuberculosis of Knee Joint. E. Kisch and A. Grunert.—p. 549.
Esophageal Stricture Following Diphtheria: Technic of Its Treatment. G. Brandt.—p. 573.
Operative Treatment of Hypertrophy of Prostate. H. Boeminghaus.—p. 579.
Sterilization of Instruments. Konrich and E. Cohn.—p. 626.
Operative Treatment of Inguinal Hernia. W. Noetzel.—p. 633.
Subchondral Necroses of Bones. J. Driver.—p. 640.
*Atony of Ureter. H. von Sauer.—p. 659.
Our Present Opinion About Malignant Melanotic Tumors of Skin and Their Most Suitable Treatment. L. Frankenthal.—p. 678.
Conservative or Surgical Therapy in Injuries of Cardiac Auricle. F. Felsenreich.—p. 694.
Late Results of Severe Injuries of Carpus. F. Felsenreich.—p. 704.
*Kyphosis in Adolescents. I. Boerema.—p. 737.
Experimental Investigations on Acidosis and Its Actions on Organism in Bacterial Infections. R. Mikoshiba.—p. 758.
Use of Heterogenous Blood as Therapeutic Aid in Infections. G. Garry.—p. 780.
Treatment of Essential Thrombopenia. A. S. Kosdoba.—p. 794.

Atony of Ureter.—After reviewing the earlier opinion on the etiology of ureteral atony, von Sauer shows that recent observations have proved that it may have various causes. He defines atony of the ureter as a paralysis of the organ, which may be due to disturbances in the innervation or to a congenital defect of the contractile elements. It would be wrong to assume that every atony is complicated by a dilatation of the ureters and of the renal pelvis, for it is now understood that atony is a condition and does not necessarily involve pathologico-anatomic changes. The latter may develop when the motility disturbance persists for a longer period, but after the injurious agent is abolished the changes may disappear again. In the summary the author points out that ureteral atony, especially in its advanced stages, is readily detectable. The infectious toxic forms are most easily diagnosed since their manifestations are such that the patient consults the physician early. The congenital forms and those of nervous origin are more difficult to diagnose, since their symptoms are less characteristic and may easily be misinterpreted. The author's experiences indicate that such cases can be correctly diagnosed only by a systematically conducted urologic examination and, particularly in the congenital forms, its results are often surprising. This shows that the physician should not be satisfied with the diagnosis cystitis simplex until after a thorough urologic examination has proved the absence of other disorders. A simple cystoscopy is not sufficient and should always be combined with a functional test, and if this is done it is usually possible to

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detect the cause of chronic pyurias and to free the patients from long suffering.

Kyphosis in Adolescents.—In thirty adolescents with kyphosis who were subjected to roentgenoscopy, Boerema detected in those aged less than 19 honeycombed lighter areas; however, in patients older than 19 years, in the place of these lighter areas, marginal proliferations were seen. The eighth, ninth and tenth dorsal vertebrae, i. e., those which, while the person is standing, are located farthest backward, were involved most frequently. This is explained as being the result of the unfavorable position of these vertebrae. Besides the correction of the kyphosis the author emphasizes the great value of the production of compensatory lordotic curvatures in the lumbar and cervical regions. He recommends treatment according to the "principle of maximal reclination" on a movable frame.

Deutsche medizinische Wochenschrift, Leipzig

57: 1921-1964 (Nov. 13) 1931

Vaccination Against Smallpox in Hospitals. A. Schlossmann.—p. 1921.
*Acute Digitalis Action for Detection of Incipient Cardiac Weakness. A. Fraenkel.—p. 1924.
*Results of and Indications for Use of Injectable Liver Extract. M. Gänsslen.—p. 1926.
Agranulocytotic Sepsis Following Tonsillectomy. L. B. Seiferth.—p. 1930.
Physiology of Puerperium: Breast Secretion and Nutritional Needs of the New-Born. C. Kaufmann and L. Bickel.—p. 1932.
Can the Present Theory of Blood-Cerebrospinal Fluid Barrier Be Maintained? U. Friedemann and A. Elkeles.—p. 1934.
Technic of Insufflation of Uterine Tubes. G. Haselhorst.—p. 1935.
Quinine Therapy of Diseases of Respiratory Organs. V. Stockhausen.—p. 1936.
Salicylic Acid Therapy with Large Doses. K. Poller.—p. 1936.
Diagnosis and Surgical Treatment of Nephrolithiasis. H. Wildegans.—p. 1937.
Absinth Consumption and Cocktail Addiction. P. Wolff.—p. 1940.

Acute Digitalis Action for Detection of Cardiac Weakness.—Fraenkel after evaluating the various tests of the functional capacity of the heart, such as determination of the minute volume, of the venous pressure, of the blood pressure, and of the size of the heart and the observation of the heart beat and respiration, emphasizes the great value of probatory strophanthin injection. If a patient has a feeling of relief after an injection of strophanthin he should be subjected to strophanthin treatment, for this subjective indication is a sure sign for slight degrees of cardiac insufficiency, and if diuresis sets in, this is a sign of latent edema. Careful observation of the subjective and objective effects of a first injection of strophanthin make it possible for every physician to detect the presence or absence of cardiac insufficiency in the course of the consultation.

Indications for Use of Injectable Liver Extract.—Gänsslen points out that his first experiences with injectable liver extract have since been corroborated by many others. After giving advice on the technic of this treatment, he states that refractoriness to liver treatment occurs only in cases that have been incorrectly diagnosed. He himself observed failure in a case of aleukemic myelosis and in two cases of hemolytic icterus. However, it would be wrong to assume that the injection of liver extract is helpful only in pernicious anemia; on the contrary, it has proved valuable in other forms of anemia, especially in those of gastro-intestinal origin, but only in the chronic forms, i. e., in those that develop slowly, whereas in the acute forms, which are due to hemorrhage, it is ineffective. In discussing the effects of injection of liver extract on the spinal symptoms of pernicious anemia the author states that they do not yield as readily as the blood status, but if the treatment is prolonged for a sufficient length of time it does influence the spinal symptoms. It would of course be wrong in such cases to discontinue liver treatment as soon as the blood status is normal. In recent times, liver treatment has been tried also in other diseases of the nervous system and favorable results have been obtained in multiple sclerosis and in night blindness. The author calls attention also to the fact that injection of liver extract hastens the coagulation process and has a hemostatic effect. Moreover, it has been found helpful in counteracting the manifestations, especially the cutaneous symptoms, of bismuth and arsphenamine intoxication. Another advantage of injection over oral treatment is the fact that it eliminates the metabolic disturbances that often result from a prolonged liver diet.

Deutsche Zeitschrift für Chirurgie, Berlin

233: 481-544 (Oct. 21) 1931

*Circulatory Hormone of Pancreas: Its Therapeutic Uses. E. K. Frey.—p. 481.
Action Mechanism of Electrosurgery, Particularly Electric Incision: Its Effect on Physicobiologic Processes in Tissue. T. Fohl and T. Reeke.—p. 517.
Surgical Therapy of Habitual Dislocation of Lower Jaw. G. Schmidt.—p. 536.

Circulatory Hormone of Pancreas: Its Therapeutic Uses.—In the first part of the article, Frey discusses the occurrence of the pancreatic circulatory hormone in the urine and in the blood, and its origin in the pancreas. He also shows how its quantity can be determined, and how it can be obtained and purified. In discussing its functions in the body he shows that the circulatory hormone occurs in two forms; namely, an active and an inactive form. It is secreted by the pancreas in the active form, but in the blood it soon becomes inactive by combining with an inactivator, and its largest portion passes through the organism in the inactive form. The kidney splits a portion of the inactive compound and eliminates in the urine the free hormone. However, the liberation of the active hormone from the inactive compound takes place not only in the kidney but also in other portions of the circulatory apparatus. The liberation is determined by the hydrogen ion concentration. According to its pharmacologic behavior the pancreatic circulatory hormone can be classified with the irritative substances. Its greatest practical significance lies in its dilator action on the smallest vessels. This dilator action is responsible for the hypotensive effect. In discussing the therapeutic action of the pancreatic circulatory hormone, the author advises intramuscular administration. In a large number of patients in whom the hormone had been employed to reduce the blood pressure, the reduction thus obtained persisted for months and in several the good effects still persist after more than a year. In patients with hypotension the circulatory hormone effected an increase in pressure, whereas its administration to persons with normal blood pressure did not cause changes. These observations indicate its regulatory action. The author further discusses the therapeutic action of the pancreatic circulatory hormone in intermittent claudication and in diseases with localized tissue necroses, namely, in Raynaud's disease, in thrombo-angiitis obliterans, and in arteriosclerosis in diabetic patients. In erythromelalgia it was ineffective, whereas in scleroderma it often proved helpful. In incipient arteriosclerotic changes, which the author thinks largely due to spastic changes in the vessels, the hormone was often helpful, but in advanced arteriosclerotic gangrene it was ineffective. In angina pectoris the first therapeutic success of the hormone was observed in a patient who had been given hormonal injections for a foot ailment but who also had angina pectoris. With the gradual disappearance of the foot trouble the stenocardiac attacks also disappeared. The therapeutic action of the hormone in angina pectoris can be explained by its dilator action on the coronary vessels. Other conditions in which the circulatory hormone proved to be a valuable aid are muscular dystrophy, menopausal disorders, arthritis, ulcerations, diabetes and bone fractures.

Deutsches Archiv für klinische Medizin, Berlin

171: 595-668 (Oct. 16) 1931. Partial Index

*Investigations on Water Content of Blood During Cardiac Stasis. C. Albrecht.—p. 595.
Investigations on Sound Transmission of Stethoscope. G. Landes.—p. 607.
Hemocalculator: A Calculating Slide for Blood Tests. F. Nolte.—p. 624.
Problem of "Persistent Eosinophilia." W. Wieck.—p. 640.
*Measurement of Transverse Section of Ascending Aorta: Method for Determination of Pulse Volume. O. Bickenbach.—p. 647.

Water Content of Blood During Cardiac Stasis.—Albrecht investigated whether the water content of the blood is increased during stasis. His tests did not clarify all processes, for in order to do this it would be necessary to compare the quantity of circulating blood during stasis with that after dehydration, and since most of the patients were gravely ill it was considered inadvisable to subject them to tests for the determination of the amount of the circulating blood. Moreover, the author considers these methods as not entirely satisfactory. His tests proved, however, that during stasis there

exists a pathologic accumulation of water in the blood, for during dehydration he often observed a considerable elimination of water, and he cites one case, in which aggravation of the circulatory disorder always was followed by an increase in the water content of the blood. Examination of the protein content of the serum during stasis revealed the protein values to be near the lower limits of normality or even subnormal, which indicates an increased water content. During acute decompensation with stasis the diluted condition of the blood was indicated also by the decreased number of erythrocytes. These observations justify the assumption that during stasis the blood retains water, but whether this increased water content is accompanied by an increase in the amount of the circulating blood cannot be demonstrated with certainty. If the stasis persists for longer periods, the water absorption by the blood can be demonstrated frequently on the reduced protein values or more regularly by the elimination of water during diuresis. The normal or even increased dry residue values in patients with stasis is in direct contrast to this. The author found that the erythrocytes, which represent an important factor in the dry residue of the blood, are not influenced by the changes in the water content of the blood but take an independent course. Even during stasis their numbers are comparatively high, and during dehydration they increase still more. To be sure, in other cases their numbers remain constant or may even decrease, in spite of elimination of water. This peculiar behavior of the erythrocytes explains why in many instances of stasis the water content of the blood per space unit is normal, in spite of the fact that the blood, like the tissues, has absorbed water. The author thinks that these complicated processes are not adequately expressed by the term hydremia.

Measurement of Transverse Section of Ascending Aorta: Method for Determination of Pulse Volume.—Bickenbach determined the pulsatory fluctuations of the aorta by kymographic roentgenoscopy. He describes the technic of this procedure and then relates his observations. He asserts that this method gives absolute values for the systolic and for the diastolic diameters of the ascending aorta. Repeated measurements revealed that the error was not more than 5 per cent. Present-day roentgen equipment permits this test to be performed only on thin persons, but a further improvement of the roentgen tubes will make it possible to perform the same tests on adipose persons.

Klinische Wochenschrift, Berlin

10: 2113-2152 (Nov. 14) 1931

Pregnancy Acidosis. H. Behrendt, J. Berberich and H. Eufinger. —p. 2113.
Functional Disturbances of Metabolism as Cause of Clinical Signs of Asthenia. D. Jahn.—p. 2116.
Hormones of Anterior Lobe of Hypophysis. B. Zondek.—p. 2121.
Demonstrability of Spleen in Roentgenogram as Functional Test of Spleen. W. König and F. R. Weber.—p. 2123.
*Hormones of Posterior Lobe of Hypophysis and Pregnancy Toxicoses. E. Fauvet.—p. 2125.
Throttle Mechanism on Hepatic Veins. H. Popper.—p. 2129.
*Sedimentation Speed in Diabetes Mellitus. L. Remen.—p. 2131.
Method for Study of Surviving Eye. W. Wegner and H. F. Roese. —p. 2133.
Free Protein Sugar and Combined Protein Sugar in Normal and Pathologic Serum, Cerebrospinal Fluid and Urine. B. Lustig and A. Langer.—p. 2133.

Hormones of Posterior Lobe of Hypophysis and Pregnancy Toxicoses.—Fauvet points out that hydrops gravidarum, pregnancy nephropathia and eclampsia are interrelated and that they can be considered as the edematous-nephrotic-eclamptic syndrome. Since these disturbances occur only during pregnancy, they are designated as pregnancy toxicoses. The author shows that these disturbances have a certain connection with the excessive production of the hormones of the posterior lobe of the hypophysis, for the pathologico-anatomic changes that are characteristic for these diseases can be produced in animals by intoxication with extracts of the posterior lobe of the hypophysis. Besides the melanophore reaction there is no direct proof for the increase of these substances in gravidas and especially in those with pregnancy toxicoses. However, Stroganoff's method, which employs chloroform inhalation anesthesia to prevent pregnancy toxicoses, is an indirect proof, for this method is based on the pharmacologic law that those actions of the posterior pituitary hormone which cause the pregnancy toxicoses can be counteracted by the anesthetic. In discussing the origin of the increased amounts of posterior pituitary hormones, the author points out that the posterior hypophysis does not show the slightest changes during pregnancy, but experiments indicate that the hypothalamus is also capable of forming these substances.

Sedimentation Speed in Diabetes Mellitus.—In 137 diabetic patients, Remen determined the sedimentation speed of the blood and investigated whether it showed a relationship to the metabolic condition. In nearly 90 per cent of the patients in whom the diabetes was not complicated by other disorders, the sedimentation speed was considerably increased. Dextrose tolerance tests revealed in some of the cases an acceleration of the sedimentation during the time when the blood sugar curve reached the highest point. Patients with acetonuria had a normal or a retarded sedimentation. In a patient with great sedimentation speed, in whom the treatment had been neglected, prolonged insulin treatment almost normalized the sedimentation speed.

Strahlentherapie, Berlin

42: 401-608 (Oct. 24) 1931

*Ray Therapy of Thyrotoxicosis. R. Gantenberg.—p. 401.
Method of Treatment in Thyrotoxicosis. E. Hayer.—p. 414.
*Roentgen Therapy of Chronic Arthritis. H. O. Röhr.—p. 425.
Roentgen Therapy of Tumors of Hypophysis. K. Frik.—p. 437.
Roentgen Therapy of Central Nervous System Exclusive of Malignant Processes. G. Kohlmann.—p. 453.
Roentgen Treatment of Pulmonary Actinomycosis. M. Lüdin.—p. 466.
Treatment of Tuberculosis of Female Genitalia. H. Martius.—p. 471.
*Roentgen Treatment of Hay Fever. F. E. Haag and H. Schreus.—p. 485.
Roentgen Treatment of Asthma in Children. W. Grävinghoff.—p. 492.
Methodical Progress of Roentgen Therapy of Cancers of Digestive Tract. H. Holfelder.—p. 497.
Results of Ray Therapy of Inoperable Carcinoma of Cervix Uteri. E. Mühlmann.—p. 504.
Experiences with Prolonged Fractional Irradiation. W. Dieterich and J. Umbach.—p. 510.
Roentgen Carcinoma as Result of Irradiation Therapy. H. Holthusen and K. Englmann.—p. 514.
Total Irradiation with Roentgen Rays. F. M. Groedel and H. Lossen. —p. 532.
Influence of Roentgen Rays of Various Quality on Psoriasis. G. A. Rost and P. Keller.—p. 539.
Distribution of Roentgen Rays in Skin. V. Wucherpfennig.—p. 544.
*Treatment of Roentgen Injuries with Rays of Long Wavelength. W. Brücker.—p. 551.
Influence of Roentgen Irradiation on Alkali Reserve of Blood. K. Käding.—p. 571.
Influence of Roentgen Irradiation on Sodium Content of Blood Serum. K. Adler and M. Adler.—p. 584.
Investigations on Time Factor. H. Wintz.—p. 591.
Education in Roentgenology for Dermatology. A. Stühmer.—p. 599.

Ray Therapy of Thyrotoxicosis.—Gantenberg states that roentgen treatment of patients with thyrotoxicosis effected cure or considerable improvement in about 50 per cent of the cases. Even in patients with true exophthalmic goiter, cure was effected in 20 per cent of the cases. Accordingly the author concludes that irradiation can be tried in all cases of thyrotoxicosis in which there are no signs of displacement that necessitate immediate surgical intervention. Patients who after from three to six months of irradiation do not show considerable improvement should be operated on; also patients with severe acute manifestations, in whom immediate intervention is advisable to prevent cardiac insufficiency. In other forms of thyrotoxicosis, irradiation is an indispensable therapeutic aid and in combination with internal treatment it is the method of choice.

Roentgen Therapy of Chronic Arthritis.—Röhr shows that in chronic arthritis, in the infectious form as well as in the proliferating and degenerative forms, roentgen treatment of the joints often effects good results after other methods have failed. The pains and the swellings are reduced, the creaking and grating sounds are lessened, and there is improvement in the movements. The action mechanism of roentgen rays is due, on the one hand, to their specific pain-allaying quality in rheumatic diseases of the joints and, on the other hand, to the destruction of newly formed tissue elements and to the stimulation of cells to normal functioning.

Roentgen Treatment of Hay Fever.—Haag and Schreus treated sixteen hay fever patients with roentgen rays. In seven cases the treatment was successful, in eight cases it failed, and

about one patient it was impossible to obtain information. The authors consider efficacy in about half of the cases as comparatively favorable for hay fever. They also found that in the patients in whom the treatment had been prophylactic the results were more favorable than in those who were treated during the hay fever season. In the latter group there was occasionally an exacerbation of the subjective manifestations and of the positive skin reactions. For this reason the authors intend in the future to put more emphasis on the prophylactic treatment.

Treatment of Roentgen Injuries with Rays of Long Wavelength.—Bröcker observed that infra-red rays, applied either before or after roentgen irradiation, do not influence the skin reactions produced by the roentgen rays. Animal experiments revealed that the infra-red rays have no prophylactic effect on roentgen injuries. The development of an ulcer could be prevented neither by preceding nor by following roentgen irradiation with infra-red treatments. However, infra-red rays are extraordinarily effective in the treatment of already existing roentgen burns. The author describes two cases of roentgen burns that were refractory to all therapeutic measures but healed as the result of infra-red treatment.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

79: 1-280 (Oct. 20) 1931

*Increase of Blood Pressure Effected by Administration of Sodium Chloride in Dogs with Experimental Exclusion of Renal Tissue. L. Hantschmann.—p. 1.
Substances Inhibiting Coagulation: Their Relation to Prothrombin. M. von Falkenhausen.—p. 18.
Relation of Glycolysis to Blood Coagulation. H. J. Fuchs and M. von Falkenhausen.—p. 23.
Prothrombin and Shock Effect. M. von Falkenhausen.—p. 29.
Ferments: Amylase and Prothrombin. H. J. Fuchs.—p. 35.
Coagulin of Muscle. F. Kraus, H. J. Fuchs and R. Merländer.—p. 59.
Cause of Shrinking of Blood Clot. H. J. Fuchs.—p. 76.
Water Tolerance as Functional Test of Liver. M. Rapoport.—p. 87.
Adsorption Therapy and Bacteriophage. H. Bechhold and M. Schlesinger.—p. 96.
Quantitative Determination of Bilirubin and of the More Highly Oxidized Bile Pigments in Urine. K. Franke.—p. 107.
Relations Between Skin Pigmentation and Elimination of Bilirubin and of Biliverdin in Urine During Icterus. K. Franke.—p. 125.
*Functional Test of Stomach as Method of Differential Diagnosis. A. E. Lewin.—p. 134.
*Occurrence of Creatinine and of Creatine in Human Sweat. R. Schumann.—p. 145.
Evaluation of Double Dextrose Tolerance Test. M. Julesz.—p. 153.
*Specific Action of Intracutaneous Injection. Wolynskij and Stoljarova. —p. 164.
Problem of Formation of True Compounds from Unsaturated Hydrocarbons with Hemoglobin. H. Killian and H. Moritz.—p. 173.
Nomograms for Calculation of Basal Metabolism. B. Kommerell.—p. 184.
Physiology and Pathology of Fatigue. A. P. Goldberg, M. W. Lepskaja and M. S. Michlin.—p. 188.
Adsorption Therapy of Acute Poisonings. B. Groák, L. Rácz and J. Erdös.—p. 199.
Conduction of Sound in Tuberculous Pulmonary Tissue. E. Bass.—p. 217.
Elimination of Nitrogen in Bile Under Normal and Abnormal Conditions. H. Lucke and G. Taaks.—p. 234.
Influence of Baltic Climate on Basal Metabolism. G. Melchert.—p. 243.
Unlimited Auxomerism of Excitation Conduction in Heart of Dogs in Higher Excitation Frequencies. W. S. Boikan.—p. 256.

Blood Pressure Increase by Administration of Sodium Chloride with Exclusion of Renal Tissue.—Hantschmann made observations on dogs in which the renal parenchyma had been reduced by resection of one kidney and by ligation of a primary branch, or a primary branch and a secondary branch of the renal artery of the other kidney. He found that this caused neither a prolonged change in the blood pressure nor changes in the rest nitrogen, in the chlorine content of the blood or in the urine. However, determination of the plasma content and of the dry residue revealed that the animals had hydremia. If these dogs are given sodium chloride by mouth in a quantity of not more than 1 Gm. for each kilogram of body weight each day, the blood pressure increases noticeably (from 40 to 85 mm.), whereas in the controls this increase is absent. At the same time, hydremia develops, which by far exceeds that of normal animals. Infusion of physiologic solution of sodium chloride, in a quantity of 1 liter in twenty minutes, likewise effects a much greater increase in the blood pressure of the animal with reduced renal parenchyma than in the normal animal. The author discusses the relation of blood pressure to sodium chloride intake, to hydremia, to plethora and to diuresis.

Functional Test of Stomach in Differential Diagnosis.—In determining the chlorine concentration of the hydrochloric acid and of the neutral salts in pure gastric juice, Lewin found a constant parallelism between the two chlorine fractions. This parallelism between the chlorine content of the acid and the chlorine content of the chlorides permits the assumption that the constant correlation is predetermined by the composition of the fluid from which the gastric glands obtain their secretory material; namely, the blood plasma. Tests that the author made on normal gastric juice and on the gastric juice of patients with disorders of the stomach reveal that the dependence of the gastric secretion on the condition of the blood plasma becomes manifest in the quantity of the gastric juice, in the correlation between the acid and the chloride fractions of the chlorine of the pure gastric juice and in the chlorine concentration and the hydrochloric acid concentration of the gastric juice. The ratio of the chloride fraction of the chlorine to the total amount of the chlorine expressed in percentage is designated as the chloride index. In comparing the various cases, one gains the impression of a reverse correlation between the quantity of juice and the chloride index. The hematogenic hypofunction of the stomach, which exists in some extragastric disorders, is characterized by a high chloride index, reduced secretion and a high concentration of the total amount of chlorine. Hematogenic hyperfunction is characterized by a low chloride index. In patients with gastric and duodenal ulcers the chloride index is extremely low. In gastritis the chloride index is changeable (decreasing) and the correlation between quantity of juice and chloride index is disturbed; in some of the cases the total chlorine content is also reduced.

Creatinine and Creatine in Human Sweat.—Schumann examined the sweat of healthy persons and of patients with various disorders for the presence of creatine and of creatinine. He found the quantitative determination possible and detected that in ten healthy young men the quantities of creatinine excreted with the sweat varied between 3.5 and 5 mg. per hundred cubic centimeters. In the majority of the patients about the same quantities were found. When the quantity was less than 3.5 mg. per hundred cubic centimeters the person had usually lost an abnormally large amount of sweat. Three of the persons belonging to this group had muscular rheumatism, arthritis deformans and subacute polyarthritis, but in these also the sweat secretion was profuse. On this basis it can be assumed that the quantity of the perspiration has a certain influence on the creatinine excretion and it is also possible that certain muscular and articular changes have an influence. In this connection the author calls attention to the observations of investigators who detected increased elimination of creatine and creatinine in the urine of patients with muscular or articular rheumatism. Of the patients in whom the creatinine content of the sweat was unusually high, one had cerebral arteriosclerosis and the others had carcinoma. Injection of pilocarpine never effected an increase in the excretion of creatinine. Creatine is found comparatively rarely in the perspiration, but the author thinks that the fact that it is occasionally eliminated is the result of the acidity of the sweat. In the same person it may at times be present and at other times not. The creatine and creatinine contents of the blood were the same as those mentioned in the literature, and neither elimination with the sweat nor injection of pilocarpine seemed to influence the creatine or creatinine content of the blood.

Specific Action of Intracutaneous Injection.—Wolynskij and Stoljarova call attention to the fact that the rapidity of action of an injected substance depends largely on the manner of injection; that is, whether the injection was intracutaneous, subcutaneous, intramuscular, intravenous or intracardial. Intracutaneous injection deserves especial consideration because, of all the methods of injection, it causes the most marked general reactions. The authors give their attention primarily to the assertion of those investigators who maintain that the main factor is not the nature of the injected substance but the injection as such. They studied the reactions after the intracutaneous injection of distilled water of physiologic solution of sodium chloride, of milk and of the person's own blood. The

observations were made on twenty-three persons. On the basis of their observations the authors reach the following conclusions: 1. A specific action of the intracutaneous injection has to be conceded. 2. Injections with distilled water and with physiologic solution of sodium chloride do not effect leukopenia. 3. Marked leukopenia appears following the intracutaneous injection of substances containing protein. 4. Thus the leukopenia developing after intracutaneous injection has no relationship to the injection as such but is entirely determined by the nature of the injected substance. 5. The leukopenia reaches its maximum during the first hour following injection, and it is mainly due to the resorption of the injected substance.

Zentralblatt für Chirurgie, Leipzig

58: 3009-3056 (Nov. 28) 1931

Silkworm-Catgut as Suture Material for Oral Cavity and for Other Moist Regions. W. Rosenthal.—p. 3010.
Successful Operation in Gunshot Wound of Lung. H. Flörcken. —p. 3011.
*Cause of Discoloration of Abdominal Wall in Acute Necrosis of Pancreas and in Ruptured Extra-Uterine Pregnancy. J. Petřivalský. —p. 3013.
Pulmonary Embolism and Coronary Infarct. A. Winkelbauer.—p. 3018.
Retroperitoneal, Multilocular, Giant Lymphangioma Cysticum. A. Burhaneddin.—p. 3023.
Control of Hemorrhage in Laminectomy for Cavernous Angioma of Vertebrae. O. Roith.—p. 3028.
Correction of Incomplete Flatfoot. T. Kölliker.—p. 3029.

Cause of Discoloration of Abdominal Wall in Necrosis of Pancreas and in Ruptured Extra-Uterine Pregnancy.—In the introduction Petřivalský mentions a number of authors who reported that they observed a bluish discoloration in the region of the umbilicus in patients with hemorrhages in the abdominal cavity, especially in ruptured extra-uterine pregnancy and in acute necrosis of the pancreas. He also reviews the explanations given by different authors for the development of this symptom. He then describes his own observations on three women with acute necrosis of the pancreas, in whom he observed this symptom. In the course of the surgical intervention he discovered that in two patients the greater omentum had adhesions in the ileocecal region, and as a result of this the intestinal loops in the left side of the abdomen were not covered with the omentum, and the inflammatory exudate was in immediate contact with the anterior abdominal wall. In the third patient, although adhesions were absent, the greater omentum was again extremely short and in the lower portion of the abdomen the intestines lay directly on the peritoneum of the anterior abdominal wall. In an evaluation of the various possibilities of the development of the discoloration in cases of rupture of intra-uterine pregnancy or of necrosis of the pancreas, it occurred to the author that perhaps the individual size of the greater omentum and the inhibition of the diaphragmatic movements, which results from a peritonitis, are causal factors of the discoloration. In order to obtain additional proof for this theory he performed experiments on dogs. His observations convinced him that the perfusion of india ink through the anterior abdominal wall was caused partly by the inhibition of the suction of the diaphragm and partly by the reduced size of the greater omentum.

Trudy Tomskogo Gos. Med. Ins., Tomsk

1: 1-173 (No. 1) 1930

*Chronic Hematuric Nephritis. M. S. Rabinovich.—p. 1.
Osteoma of Nose and Accessory Sinuses. A. G. Fetisov.—p. 51.
Thyroidectomy in Myxedematous Cretinism. L. F. Smirnov.—p. 84.
Extra-Uterine Pregnancy in Siberia During Last Ten Years. N. I. Gorizontov.—p. 103.
*Charcot-Leyden Crystals in Blood in Leukemias. D. D. Yablokov. —p. 127.
Nervous Diseases in Children. M. N. Varshavskaya.—p. 138.
Secretion of Pancreas in Gastric Anacidity. F. K. Menshikov.—p. 146.
Disturbance in Sense of Spatial Orientation. Ya. L. Vikker.—p. 158.
Power of Masseter Muscle and Strength of Inferior Maxilla. M. K. Zamyatin.—p. 163.

1: 1-137 (No. 2) 1931

*Chronic Hematuric Nephritis (C'cn.). M. S. Rabinovich.—p. 1.
Osteoma of Nose and Accessory Sinuses (C'cn.). A. G. Fetisov.—p. 31.
Horseshoe Kidney. M. K. Zamyatin.—p. 69.
Physiology of Intestinal Secretion. B. I. Bayandurov.—p. 90.
Anatomopathology of Hydrophobia in Man. V. Konstantinov.—p. 100.
Syphilis of Liver in Adults. D. D. Yablokov.—p. 113.

Chronic Hematuric Nephritis.—Rabinovich details his studies first begun under V. M. Mish and curtailed by the Great War. His report is divided into four parts: The first includes an historical survey of chronic hematuric nephritis; the second deals separately with (*a*) essential renal hematuria, (*b*) neuralgia renalis and néphralgie haematurique, (*c*) angionephritic renal hematuria and (*d*) renal hemophilia; the third deals with the pathologic anatomy of hematuric nephritis; and the fourth deals with the clinical aspects of hematuric nephritis. After many years of study and observation, the author draws the following conclusions: There is no such thing as essential renal hematuria; the numerous instances published all had an anatomic basis. If this is granted, there is no renal nephralgia, hematuric nephralgia or renal angionephrosis. There is no renal, in the sense of constitutional (not localized), hemophilia. The underlying factor in all cases is hematuric nephritis which, although at times seemingly constitutional, causes profuse hemorrhage. Hematuric nephritis exists when there is profuse renal hemorrhage and when there are present only those macroscopic and microscopic changes common to nephritis. The pathologic anatomy of hematuric nephritis consists of changes in the cortex and in distinct parts of the kidney, predominating in the vascular region especially in the glomeruli. Unilateral nephritis is at present only a clinical entity; there is no pathologico-anatomic proof. Painful nephritis, in a clinical sense, shows the same pathologico-anatomic changes as hematuric nephritis. Hematuric and painful nephritis appear during the chronic course of glomerulonephritis. The author stresses the fact that the diagnosis of hematuric nephritis is difficult and never certain until operation. It has been believed that four factors were responsible for hematuria; namely, calculi, tumors, tuberculosis and hematuric nephritis. To these are now added cystic kidneys, granular pyelitis, hydronephrosis, pyonephrosis and many vascular renal anomalies. The author offers some experimental evidence in regard to a relationship between the calices and the venous circulation within the kidney, demonstrates a pyelovenous reflex and offers three microscopic possibilities in the development of hemorrhage: (1) direct bleeding from the veins in the region of the pelvis by reason of the pyelovenous connection; (2) perivascular hemorrhage in the pelvis of the kidney, with hemorrhagic infiltration in the perivascular and peritubular lymphatic spaces and a break in the urinary canaliculi subsequent to subcapsular resection (in the Bowman's capsules) with overflow of the blood into the lymphatic spaces, and (3) the development of a perivascular lymphangitis assisted by an inflammatory process in the fornix calicis and causing a venous thrombosis and a hemorrhage with stagnation. The fact that the differential diagnosis of hematuric nephritis is based on negative observations and that neither a first, second nor third disease entity is hematuric nephritis is demonstrated on operation. The factors bringing about hematuric nephritis are chronic infection or intoxication from a primary focus distributed over different parts of the skin, with an afflux of lymphoidal tissue as chief cause. A series of etiologic factors are also overexertion, physical strain and pregnancy. The symptomatology of chronic hematuric nephritis has few definite characteristics that can be unequivocally described. The diagnosis of hematuric nephritis should be made when other factors are excluded and the macroscopic observations indicate hematuria.

Charcot-Leyden Crystals in Blood in Leukemias.—Yablokov examined the blood for Charcot-Leyden crystals in eight cases of chronic myelogenous leukemia, five cases of chronic lymphatic leukemia and one case of acute myelogenous leukemia. The blood was obtained in the usual manner from the finger or from the arm. Examination shortly after the drawing of the blood (thirty minutes or later) demonstrated the presence of crystals in the myelogenous leukemias, their absence in lymphatic leukemias, myelogenous subleukemias, bronchial asthma, echinococcus infestation of the liver, severe vagotonia and other diseases. The author believes that the presence of the Charcot-Leyden crystals should prove a valuable aid in the diagnosis of myeloblastic leukemias. However, he admits that further study is necessary, since his study like others was based on insufficient clinical material.